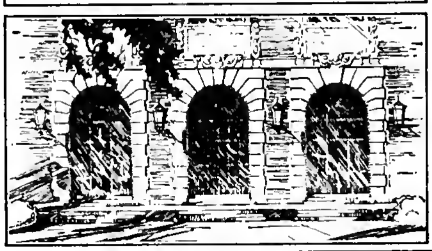

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AN ANNOTATED BIBLIOGRAPHY OF GEOLOGY AND LAND USE PLANNING

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BY

F. V. Kieffer

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INTRODUCTION

> The library exists ab aeterno. No reasonable mind can doubt this truth, whose immediate corollary is the future eternity of the world. Man, the imperfect librarian, may be the work of chance of malevolent demiorges; the universe, with its elegant endowment of shelves, of enigmatic volumes, of indefatigable ladders for the voyager, and of privies for the seated librarian, can only be the work of a God.
>
> \- Julius Borges, *The Library of Babel*

This bibliography is by no means meant to be either definitive or exhaustive. Rather, it is exemplary. It is a preliminary attempt to bring together from the complex and sometimes disparate branches of the geologic sciences and also from planning methodologies illustrative sources germane to geologic principles and phenomena applicable in land use planning. I'm sure many important reference works and documents have eluded me under the dual project constraints of time and available library facilities. However, it is hoped enough material is presented here to substantiate various textual claims made as to the need for and viability of identifying and integrating geologic information into the land use planning process. It is hoped that the material herein will serve as a basis in the near future for a more complete and exact quantification of geology in its relation to land use planning principles, and that the scholarly, governmental, and public sectors of society will have a foundation on which to understand and advance their knowledge in this area.

Most of the material herein was gathered over the course of several years of professional employment and what almost became

professional study, terminating in August of 1975. Preliminary searches for geologic background material relating to land use planning were performed while I was employed as part of a study group team at the State of Ohio Department of Natural Resources in constructing a holistic land use simulation model. Further work on this bibliography was accomplished in the course of writing my master's thesis in urban planning at the University of Washington at Seattle on geologic hazards and land use planning.

Through these studies it became clear that no analytical or assessment model integrating first order geologic data with the second order need to determine values and possible trade-offs in land uses had been constructed. Neither, to date, do I know of such a successful model. The reader in search of a comprehensive methodology and data format for one's own particular on-site evaluation needs is cautioned that, unfortunately, it is not available on these pages. Rather, numerous examples and options in assessing and interpreting geologic data for land use decisions are given. The researcher may apply one approach, or a variant thereof, to his own needs. Geologic data, units, possible hazards, and values of land use may be completely different from one area to another, such as the basalt lava plateau with loess deposits and little groundwater in central Washington State as contrasted to an uplifted and dissected sedimentary block of strata with heavy rainfall in Appalachia.

FORMAT

A brief note on the format of this bibliography is in order. Whenever possible, citations are referenced alphabetically by author. However, in ths case of the United States Geological Survey folios on specific quadrangles in the miscellaneous geologic investigation map series, citations are entered under "Folio," and then alphabetically by quadrangle or place names. If a specific quadrangle or area in a folio series has also been investigated in the United States Geological Survey geologic quadrangle map series or other United States Geological Survey publication for the base geology formations, the geologic mapping is included under the appropriate folio series.

In an attempt to facilitate bibliographic use, the references are divided roughly into five broad (and sometimes overlapping) categories, identified by the appropriate letter to the right side of the entry. These classifications are:

(A) - basic reference works and texts on geology;

(B) - works which generally interpret geologic processes and provide criteria or formats for the application of geologic data in land planning;

(C) - reports or projects which utilize geologic information in arriving at actual decisions or recommendations for land use;

(D) - documents which I was unable to obtain and examine personally for annotation, but which were culled from other bibliographies and references and included here;

(E) - sources which do not specifically stress geology in a land use plan, but provide insights into methodologies or system format approaches in land use planning.

The references in the bibliography are numbered sequentially to permit cross-referencing to related works included herein. Where appropriate, in some instances in parenthesis after an annotation are the numbers of documents related to the work either on the criteria of similarity of subject matter or of geographical correspondence or proximity. In some listed references I have indicated in the annotation the degree of technical background necessary for adequate comprehension of the listed work, and, if a reference contains a bibliography which would promote further research, that has also been noted.

BIBLIOGRAPHIC ABBREVIATIONS

BAEG..................Bulletin of the Association of Engineering Geologists

Co....................Company

D.C...................District of Columbia

ed....................edited by, edition, editor, editors

ISGS..................Illinois State Geological Survey

C.................Circular

EGN...............Environmental Geology Notes

Inc...................Incorporated

n.d...................No date

No....................Number

pp....................pages

USGS..................United States Geological Survey

B.................Bulletin

C.................Circular

GQM...............Geologic Quadrangle Map

MFSM..............Miscellaneous Field Study Map

MGIM..............Miscellaneous Geologic Investigations Map *

OFR...............Open File Report

PP................Professional Paper

Vol...................Volume

Wash..................Washington

* Series title varies; also known as Miscellaneous Investigations Series Map or Miscellaneous Investigations Series.

BIBLIOGRAPHY

1. Allen, Alice S. "Geologic Settings of Subsidence." In Reviews in Engineering Geology, Vol. II, ed. David J. Varnes and George Kiersch, pp. 305-342. Boulder, Colorado: Geological Society of America, 1969. 350. B

A technical article reviewing all forms of land subsidence due primarily to natural geologic processes. Examples are cited together with geologic evidence for diagnosing their causes. With extensive bibliography.

2. Bergstrom, Robert E. Feasibility of Subsurface Disposal of Industrial Wastes in Illinois. ISGS C 426. Urbana, Illinois: ISGS, 1968. 18. B

An assessment of bedrock geology units and properties for deep-well disposal suitability of industrial wastes for the State of Illinois. As a result of lithological disposal capabilities, Illinois is divided into five graded feasibility zones for disposal.

3. ________. Geology for Planning at Crescent City, Illinois. ISGS EGN No. 36. Urbana, Illinois: ISGS, 1970. 15. C

A six-mile square area in rural Illinois was studied to provide information on geology and mineral resources for planning and municipal services. Emphasis is on surficial geology, engineering geology, ground water, waste disposal, and gas storage.

4. Blanc, Robert P. and George B. Cleveland. Natural Slope Stability as Related to Geology, San Clemente Area, Orange and San Diego Counties, California. State of California Division of Mines and Geology Special Report 98. San Francisco: State of California, 1968. 19pp. with plates. B

With the impact of urbanization on hillsides in the San Clemente, California area, a study was initiated to evaluate the stability of natural slopes by determining the causes of landslides in a data format readily usable for broad scale urban planning. All principal geomorphic factors are identified and displayed on a single map which shows the general range of natural slope stability throughout the area.

5. Borcherdt, R. D., ed. Studies for the Seismic Zonation of the San Francisco Bay Region. USGS PP 941-A. Washington, D.C.: Government Printing Office, 1975. A 102 (see related subject and geographic material 6, 175, 248, 249, 251, 254, 268, 269). C

The state of the art for assessing potential earthquake effects on a regional scale for seismic zonation of San Francisco is covered. Specific studies include faults, bedrock motion, geologic parameters, shaking potential, and landslide and liquefaction potential. An earthquake intensity of 6.5 is modeled for the San Andreas fault. With bibliography.

6. Borcherdt, R. D. and J. F. Gibbs. Prediction of Maximum Earthquake Intensities for the San Francisco Bay Region. USGS OFR 75-180. 1975. 26pp. plus plates (see related subject and geographic material 5, 175, 248, 249, 251, 254, 268, 269). D

7. Briggs, R. P. Map of Overdip Slopes that can Affect Landsliding in Allegheny, County, Pennsylvania. USGS MFSM MF-530. Washington, D.C.: USGS, 1974. 1:125,000. D

8. Brown, Robert D., Jr. Map Showing Recently Active Breaks Along the San Andreas and Related Faults Between the Northern Gabilan Range and Cholame Valley, California. USGS MGIM I-575. Washington, D.C.: USGS, 1970. 1:62,500 (see related subject material 10, 23, 233, 247, 255, 265, 272, 289). B

The San Andreas fault zone is traced from south of San Francisco to the Cholame Valley by eight strip maps.

9. Brown, Robert D., Jr. et al. The Parkfield-Cholame California, Earthquakes of June-August 1966: Surface Geologic Effects, Water Resources Aspects, and Preliminary Seismic Data. USGS PP 579. Washington, D.C.: Government Printing Office, 1967. 66. B

In the Parkfield-Cholame area of California and earthquake with a magnitude of 5.5 on the Richter scale occurred on June 27, 1966. This collection of investigatory essays covers surface tectonic fractures, rates and patterns of progressive deformation, engineering and water-resources geologic aspects, and seismic instrumentation.

10. Brown, Robert D., Jr. and Edward W. Wolfe. Map Showing Recently Active Breaks Along the San Andreas Fault Between Point Delgada and Bolinas Bay, California. USGS MGIM I-692. Washington, D.C.: USGS, 1972, 1:24,000 (see related subject material 8, 23, 233, 247, 255, 265, 266, 272, 289). B

One of a series of strip maps showing recently active fault breaks along the San Andreas and other active faults in California. It is designed to inform persons who are concerned with land use near the fault of the location of those fault breaks that have moved recently. With accompanying text and annotated bibliography.

11. Building Codes and Related Matters Committee, Los Angeles Section, Assocation of Engineering Geologists. Geology and Urban Development. Glendale, California: Association of Engineering Geologists Special Publication, 1965. 22pp. plus appendices. B

The application of engineering geology for urban land use planning is covered. Specific urban geologic hazards (landslides, soil creep, settlement, flooding, and earthquakes) are reviewed along with the format and evaluation of a geologic report, control procedures for grading operations, geologic mapping, and grading codes. The emphasis is on site evaluation.

12. Bull, William B. Alluvial Fans and Near-Surface Subsidence in Western Fresno County, California. USGS PP 437-A. Washington, D.C.: Government Printing Office, 1964. A70 (see related subject and geographic material 13, 14, 15, 16, 202, 203, 204, 205, 215, 216, 217, 220, 238, 239, 240, 260). B

Near-surface subsidence on certain alluvial fans in the San Joaquin Valley of Fresno County, California has damaged ditches, canals, roads, pipelines, and electric-transmission towers. The research paper deals exclusively with land subsidence due to compaction of deposits when wetted. Geology and geomorphology of the alluvium and mechanics of subsidence are covered. Near-surface subsidence results chiefly from the compaction of the deposits by an overburden load as the clay bonds supporting the voids is weakened by water percolating through the deposits for the first time. With bibliography.

13. ________. Land Subsidence Due to Ground Water Withdrawal in the Los Banos-Kettleman City, Area, California: Part 2, Subsidence and Compaction of Deposits. USGS PP 437-F. Washington, D.C.: Government Printing Office, 1975. F 90 (see related subject and geographic material 12, 14, 15, 16, 202, 203, 204, 205, 215, 216, 217, 220, 238, 239, 240, 260).

14. ________. Prehistoric Near-Surface Subsidence Cracks in Western Fresno County, California. USGS PP 437-C. Washington, D.C.: Government Printing Office, 1972, 85 (see related subject and geographic material 12, 13, 15, 16, 202, 203, 204, 205, 215, 216, 217, 220, 238, 239, 240, 260). B

Thousands of vertical, clay-filled tension cracks in alluvial fans during construction of the California Aqueduct in the San Joaquin Valley, California, raised the possibility of postconstruction tensional rupture of the canal. Investigation of the historical geology, geomorphology, and crack mechanics of the area was undertaken. Nearly all the cracks are the result of prehistoric compaction due to wetting caused by streamflow, and the possibility of future near-surface subsidence related to the California Aqueduct is slight.

15. Bull, William B. and Raymond E. Miller. Land Subsidence Due to Ground-Water Withdrawal in the Los Banos-Kettleman City Area, California: Part 1, Changes in the Hydrologic Environment Conducive to Subsidence. USGS PP 437-E. Washington, D.C.: USGS, 1975. E 71 (see related subject and geographic material 12, 13, 14, 16, 202, 203, 204, 205, 215, 216, 217, 220, 238, 239, 240, 260). B

A technical paper, and part of a series of reports on the California ground subsidence problem, the nature of the deposits and the changes caused by man leading to subsidence are covered.

16. Bull, William B. and J. F. Poland. Land Subsidence Due to Ground-Water Withdrawal in the Los Banos-Kettleman City Area, California: Part 3, Interrelations of Water-Level Change, Change in Aquifer-System Thickness, and Subsidence. USGS PP 437-G. Washington, D.C.: Government Printing Office, 1975. G62 (see related subject and geographic material 12, 13, 14, 15, 202, 203, 204, 205, 215, 216, 217, 220, 238, 239, 240, 260). D

17. Calder, Nigel. The Restless Earth: A Report on the New Geology. New York: Viking Press, 1972. 152. A

A non-technical and illustrated but well-written presentation of the "new geology." The mechanisms of earthquakes and volcanoes and the formation and availability of mineral resources is discussed from the viewpoint of the drifting continent theory.

18. Campbell, Russell H. Isopleth Map of Landslide Deposits, Point Dume Quadrangle, Los Angeles County, California. USGS MFSM MF-535. Washington: USGS, 1974. 1:24,000. D

19. ________. Soil Slips, Debris Flows, and Rainstorms in the Santa Monica Mountains and Vicinity, Southern California. USGS PP 851. Washington, D.C.: Government Printing Office, 1975. 51. B

In ten years twenty-three people have been killed, along with extensive property damage, due to soil slippage during heavy rains in the Santa Monica urbanized area. Variables contributing to slope failure are outlined, slippage is correlated with rainfall intensity, particularly in respect to the January 1969 rainstorm, and damage sites are inventoried.

20. Chase, G. H. and J. A. McConaghy. Generalized Surficial Geologic Map of the Denver Area, Colorado. USGS MGIM I-731. Washington, D.C.: USGS, 1972. 1:62,500. A

21. Chronic, Feliae and John Chronic. Bibliography and Index of Geology and Hydrology, Front Range Urban Corridor, Colorado. USGS B 1306. Washington, D.C.: Government Printing Office, 1974. 102. A

A bibliographic listing of more than 1,800 reports, articles, and theses for the greater Denver area of eight counties on the eastern scarp of the Rocky Mountains.

22. Clark, J. C. et al. Preliminary Geologic Map of the Monterey and Seaside 7.5 - Minute Quadrangles, Monterey, California, with Emphasis on Active Faults. USGS MFSM MF-577. Washington, D.C.: USGS, 1974. 1:24,000. D

23. Clark, Malcolm M. Map Showing Recently Active Breaks Along the Garlock and Associated Faults, California. USGS MGIM I-741. Washington, D.C.: USGS, 1973. 1:24,000 (see related subject material 8, 10, 233, 247, 255, 265, 266, 272, 289). B

Eight strip maps showing the Garlock fault zone running from the San Joaquin Valley east to the Mohave Desert. Over forty annotated references are given.

24. Clark, Thomas H. and Colin W. Stearn. Geological Evolution of North America, 2d ed. New York: The Ronald Press Co., 1960. 570. A

A geologic textbook which de-emphasizes the traditional period nomenclature and postulates sequence theory. The emphasis is on sedimentary environmental processes for the North American continent.

25. Crandell, Dwight R. Map Showing Potential Hazards from Future Eruptions of Mount Rainier, Washington. USGS MGIM I-836. Washington, D.C.: USGS, 1973. 1:250,000 (see related subject and geographic material 26, 27, 28). B

Area divided into three relative degrees of risk respectively for two major hazards, mudflow and volcanic as debris (tephra).

26. __________. "Paradis Debris Flow at Mount Rainier, Washington." In Short Papers in Geology and Hydrology Articles 1-59: Geological Survey Research 1963, pp. B135-B139. USGS PP 475-B. Washington, D.C.: Government Printing Office, 1963 (see related subject and geographic material 25, 27, 28). B

The Paradise debris flow blankets the Paradise Park area on the South Flank of Mount Rainier, Washington. It is roughly correlative in age with the 4,800 year old Osceola Mudflow on the northeast flank of the volcano; both probably originated as debris avalanches from a former summit of Mount Rainier volcano.

27. Crandell, Dwight R. and Robert K. Fahnestock. Rockfalls and Avalanches from Little Tahoma Peak of Mt. Rainier Washington. USGS B 1221-A. Washington, D.C.: Government Printing Office, 1965. A30 (see related subject and geographic material 25, 26, 28). B

A discussion of the causes and mechanics of rockfalls on the eastern side of Mt. Rainier in 1963. The avalanches involved about 14 million cubic yards of material, traveled some 4 miles, and stopped less than half a mile from a large public campground.

28. Crandell, Dwight R. and Donald R. Mullineaux. Volcanic Hazards at Mount Rainier Washington. USGS B 1238. Washington, D.C.: Government Printing, 1967. 26 (see related subject and geographic material 25, 26, 27). B

The frequency and extent of lava flows, pumice rains, and debris flows are discussed along with their possible dangers to man for Mt. Rainier, Washington.

29. Dictionary of Geological Terms. Garden City, New York: Dolphin Books of Doubleday and Co., Inc., 1962. 545. A

Prepared under the direction of the American Geological Institute, it is an abridged non-technical version of the Glossary of Geology and Related Sciences (1960). Over 7,500 common terms in geology and related sciences are given.

30. Dobrovolny, Ernest and Henry R. Schmoll. "Geology as Applied to Urban Planning: An Example from the Greater Anchorage Area Borough, Alaska." In International Geological Congress Report of the Twenty-Third Session--Czechoslovakia 1968: Proceedings of Section 12; Engineering Geology in Country Planning, ed. Miroslav Malkovsky and Quido Zaruba, pp. 39-56. Prague: Academia, 1968. B

Using the 1964 Alaska earthquake as an example, the problems and necessity of relating geologic information to land use planning is discussed. Application of the geologic map and specialized maps on slope, slope stability, construction materials, and recreation as guides to development is presented.

31. Du Montelle, Paul B. Geologic Investigation of the Site for an Environmental Pollution Study. ISGS EGN No. 31. Urbana, Illinois: ISGS, 1970. 19. B

A presentation of the geologic investigation necessary to prepare a study area site for the effects of pollutants under simulated natural-flow conditions. Sample procedures, material inventory, and engineering analyses are given.

32. Earthquake and Geologic Hazards Conference. Proceedings of a Symposium held December 7 and 8, 1964, at San Francisco, California. Sacramento, California: State of California Resources Agency, n.d. (1964?). 154. B

33. Eckel, Edwin B. "Interpreting Geologic Maps for Engineers." In Symposium on Surface and Subsurface Reconnaissance, pp. 5-15. American Society for Testing Materials Special Technical Publication No. 122. Philadelphia, Pennsylvania: American Society for Testing Materials, 1952 (see related subject material 191, 236, 287). B

An old but not outdated non-technical explanation of the procedures and current capabilities in regrouping basic geologic map units into differentiations based on engineering properties.

34. ________, ed. Landslides and Engineering Practice. Highway Research Board Special Report 29. Washington, D.C.: Highway Research Board, 1958. 232. B

The basic reference work on landslides, and covering the entire field from causes to cures. The various chapters deal with definitions, economic and legal aspects, types and processes, identification, airphoto interpretation, field and laboratory investigations, prevention, correction, and stability analysis. Aimed primarily at the professional geologist and engineer, it includes illustrations and bibliographies.

35. Erickson, L. F., ed. Proceedings of the 7th Annual Engineering Geology and Soils Engineering Symposium. Held at Moscow, Idaho, April 9, 10, and 11, 1969. Moscow, Idaho: Idaho Department of Highways, University of Idaho, and Idaho State University, 1969. 289. B

A collection of eighteen fairly technical papers covering such subjects as engineering interpretations of soil data, geological and engineering properties of glacial till, ground water flow in glacial deposits, a soils and rock information storage system, tunnel exploration, and rock mechanics for underground excavations.

36. Erskine, Christopher F. Landslides in the Vicinity of the Fort Randall Reservoir, South Dakota. USGS PP 675. Washington, D.C.: Government Printing Office, 1973. 65pp. plus plates. B

Several types of landslides, including rockfalls, soilflows, slumps, and earthflows, are common in the Missouri River trench of South Dakota in the area of the Fort Randall Dam and reservoir. Landslide investigation consisted of analysis of the local Pierre shale, appraisal of selected study areas, groundwater investigations, and measurement of landslide movements. Theories of landslide mechanisms are discussed and evaluated. All landslides in the area are activated primarily by erosion and ground water, which may be considered as general causes or as trigger actions.

37. Evans, James R. "Grain Size of Fragmental Sedimentary Rocks." Mineral Information Service 13, No. 19 (September 1960): 1-8. San Francisco: State of California Division of Mines. A

An excellent discussion of a complex subject. Methods of size measurement, significance of grain size to the geologist and engineer, and a comparison (along with chart) of the various geologic and engineering grade scales is given. With bibliography.

38. Fisher, W. L. et al. Environmental Geologic Atlas of the Texas Coastal Zone--Galveston-Houston Area. Austin, Texas: University of Texas Bureau of Economic Geology, 1972. 91pp. plus plates. E

First in a seven volume series of a comprehensive inventory of the natural resources and man-made features of the Texas coastal zone. A far-reaching and detailed attempt is made to provide the data base necessary to assess natural environmental conditions and processes versus the necessity of increasing resource consumption so development will be compatible with the natural limitations imposed by the physical, chemical, and biologic setting. Subjects assessed in text and map form include environmental geology, biologic environments and assemblages, current land use, mineral and energy resources, active processes of erosion, weather, and oceanography, man-made features and water systems, rainfall and stream discharge, topography and bathymetry, and physical properties of the land surface. The base mapping scale is 1:250,000.

39. Flawn, Peter T. "The Environmental Geologist and the Body Politic." Geotimes 13, No. 6, July-August 1968, 13-14. B

Types of geologic specialties are differentiated, and the ethics of the geologist in respect to interpretation of data is discussed. Advocated is the political "coming out" of the geologist through professional organizations.

40. __________. Environmental Geology: Conservation, Land-Use Planning, and Resource Management. New York: Harper and Row, 1970. 313. A

A thorough and professional but understandable book on the application of geological sciences for land use planning, primarily urban. Basic explanations of landforms and earth processes are given along with their interpretation and practical application. Engineering properties of rocks are discussed. The types and uses of water and minerals is covered and specific pollutants, conservation, management, and benefit cost analysis are reviewed. Appendices include a building code on excavation and grading, rock classification, and a glossary of geologic terms.

41. Flint, Richard Foster. Glacial and Quaternary Geology. New York: John Wiley and Sons, Inc., 1971. 892. A

A technical text which covers world-wide glacial geology with an explanation of glacial mechanisms and stratigraphy. With extensive bibliography.

Folio of the Anchorage Area and Vicinity, Alaska

42. Schmoll, Henry R. and Ernest Dobrovolny. Generalized Geologic Map of Anchorage and Vicinity Alaska. USGS MGIM I-787-A. Washington, D.C.: USGS, 1972. 1:24,000. B

Eighty map units of the detailed geologic map are recombined into sixteen units according to the criteria of origin and composition of deposits.

43. __________. Slope Map of Anchorage and Vicinity, Alaska. USGS MGIM I-787-B. Washington, D.C.: USGS, 1972. 1:24,000. B

Slope is divided into seven categories with an explanation of the three systems used in measuring slope and the relationship among the systems.

44. __________. Construction Materials Map of Anchorage and Vicinity, Alaska. USGS MIS I-787-C. Washington, D.C.: USGS, 1973. 1:24,000. D

45. __________. Foundation and Excavation Conditions Map of Anchorage and Vicinity, Alaska. USGS MGIM I-787-D. Washington, D.C.: USGS, 1974. 1:24,000. B

Five map units are arranged in a relative sequence from excellent to poor foundation and excavation conditions. These units were made by combining three categories based on relative ease of excavation and four categories of foundation conditions based on relative load-bearing capacity of the material independent of its response to earthquake shock. Foundation and excavation conditions represented by the map units are also related to dominant geologic materials and slope categories.

46. Dobrovolny, Ernest and Henry R. Schmoll. Slope Stability Map of Anchorage and Vicinity, Alaska. USGS MIS I-787-E. Washington, D.C.: USGS, 1974. 1:24,000. D

Folio of the Aspen Quadrangle, California

47. Bryant, Bruce. Geologic Map of the Aspen Quadrangle, Pitkin County, Colorado. USGS GQM GQ-933. Washington, D.C.: USGS, 1971. 1:24,000. B

48. ________. Map Showing Areas of Selected Potential Geologic Hazards in the Aspen Quadrangle, Pitkin County, Colorado. USGS MGIM I-785-A. Washington, D.C.: USGS, 1972. 1:24,000. B

Flood plains, alluvial fans, landslide areas, rockfall areas, wet meadows, and potentially unstable slopes are mapped.

49. ________. Map Showing Ground-Water Potential in the Aspen Quadrangle, Pitkin County, Colorado. USGS MGIM I-785-B. Washington, D.C.: USGS, 1972. 1:24,000. B

Groundwater areas are divided into eight classes and related to the type of strata for expected water yield.

50. ________. Map Showing Relative Ease of Excavation in the Aspen Quadrangle, Pitkin County, Colorado. USGS MGIM I-785-C. Washington, D.C.: USGS, 1972. 1:24,000. B

Excavation ease is divided into five relative classes.

51. ________. Map Showing Mines, Prospects, and Areas of Significant Silver, Lead, and Zinc Production in Aspen Quadrangle, Pitkin County, Colorado. USGS MGIM I-785-D. Washington, D.C.: Government Printing Office, 1972. 1:24,000. B

Shafts, mine locations, and production are given.

52. ________. Slope Map of the Aspen Quadrangle, Pitkin County, Colorado. USGS MGIM I-785-E. Washington, D.C.: Government Printing Office, 1972. 1:24,000. B

Slope is expressed as a percent in five classes ranging from less than five to greater than seventy.

53. ________. Map Showing Relative Permeability of Rocks and Surficial Deposits of the Aspen Quadrangle, Pitkin County, Colorado. USGS MGIM I-785-F. Washington, D.C.: USGS, 1972. 1:24,000. B

Permeability is expressed in three relative classes as high, moderate, and low.

54. ________. Map Showing Avalanche Areas in the Aspen Quadrangle, Pitkin County, Colorado. USGS MGIM I-785-G. Washington, D.C.: USGS, 1972. 1:24,000. B

Possible snow avalanche areas are delineated.

55. __________. Map Showing Types of Bedrock and Surficial Deposits in the Aspen Quadrangle, Pitkin County, Colorado. USGS MGIM I-785-H. Washington, D.C.: USGS, 1972. 1:24,000. B

Folio of the Evergreen Quadrangle, Colorado

56. Sheridan, Douglas M., John C. Reed, Jr. and Bruce Bryant. Geologic Map of the Evergreen Quadrangle, Jefferson County, Colorado. USGS MGIM I-786-A. Washington, D.C.: USGS, 1972. 1:24,000. B

57. Reed, John C., Jr. and John R. Reith. Vegetation Map of the Evergreen Quadrangle, Jefferson County, Colorado. USGS MGIM I-786-B. Washington, D.C.: Government Printing Office, 1972. 1:24,000.

    Thirteen map units giving vegetation types from dense coniferous forest to artificially cleared areas. Percent of ground covered, principal trees, shrubs, and location is given for each unit.

58. Bryant, Bruce and John C. Reed, Jr. Slope Map of the Evergreen Quadrangle, Jefferson County, Colorado. USGS MGIM I-786-C. Washington, D.C.: USGS, 1972. 1:24,000. B

    Slope is expressed in five categories ranging from less than five to greater than seventy.

59. __________. Map Showing Approximate Density of Houses in the Evergreen Quadrangle, Jefferson County, Colorado. USGS MGIM I-786-D. Washington, D.C.: USGS, 1972. 1:24,000. B

    Houses per hundred acres are expressed in ten categories ranging from less than one to greater than 120.

60. Schmidt, Paul W. and John C. Reed, Jr. Map Showing Approximate Locations, Depths, and Estimated Yields of Water Wells in the Evergreen Quadrangle, Jefferson County, Colorado. USGS MGIM I-786-E. Washington, D.C.: USGS, 1972. 1:24,000. B

61. Reed, John C., Jr., Douglas M. Sheridan and Bruce Bryant. Map Showing Faults, Joints, Foliation, and Surficial Deposits in the Evergreen Quadrangle, Jefferson County, Colorado. USGS MGIM I-786-F. Washington, D.C.: USGS, 1972. 1:24,000. B

62. Offield, T. A. and H. A. Pohn. Map Showing Thermal Lineaments in the Evergreen Quadrangle, Jefferson County, Colorado. USGS MIS I-786-G. Washington, D.C.: USGS, 1975. 1:24,000. D

Folio of the Golden Quadrangle, Colorado

63. Van Horn, Richard. Bedrock Geology of the Golden Quadrangle, Colorado. USGS GOM GQ-103. Washington, D.C.: USGS, 1957. 1:24,000. A

64. Gardner, Maxwell E. and Stephen S. Hart. Preliminary Engineering Geologic Map of the Golden Quadrangle, Jefferson County, Colorado. USGS MFSM MF-308. Washington, D.C.: USGS, 1971. 6 sheets; 1:24,000. B

Rock units are divided into sedimentary, igneous, and metamorphic categories with tabular text for each presenting nine characteristics of use such as earthquake stability, workability, and foundation stability. Stratigraphic units are then recombined into engineering units.

65. Van Horn, Richard. Surficial and Bedrock Geologic Map of the Golden Quadrangle, Jefferson County, Colorado. USGS MGIM I-761-A. Washington, D.C.: USGS, 1972. 1:24,000. B

66. Simpson, Howard E. Map Showing Landslides in the Golden Quadrangle, Jefferson County, Colorado. USGS MGIM I-761-B. Washington, D.C.: USGS, 1973. 1:24,000. B

Historical landslides are map plotted in three categories; known, probable, and possible, along with their type of compositional material.

67. __________. Map Showing Areas of Potential Rockfalls in the Golden Quadrangle, Jefferson County, Colorado. USGS MGIM I-761-C. Washington, D.C.: USGS, 1973. 1:24,000. B

Estimated relative likelihood of rockfalls and their potential slide areas are identified.

68. __________. Map Showing Earth Materials That May Compact and Cause Settlement in the Golden Quadrangle, Jefferson County, Colorado. USGS MGIM I-761-D. Washington, D.C.: USGS, 1973. 1:24,000. B

Potential subsidence areas with surficial deposits of wind-blown or organic silt are delineated.

69. __________. Map Showing Man-Modified and Man-Made Deposits in the Golden Quadrangle, Jefferson County, Colorado. USGS MGIM I-761-E. Washington, D.C.: USGS, 1973. 1:24,000. B

Folio of the Hartford North Quadrangle, Connecticut (see related material 236)

70. Cushman, R. V. Geology of the Hartford North Quadrangle. Connecticut. USGS GQM GQ-223. Washington, D.C.: USGS, 1963. 1:24,000. B

71. Pessl, Fred, Jr. and C. T. Hildreth. Unconsolidated Materials, Hartford North Quadrangle. Connecticut. USGS MGIM I-784-A. Washington, D.C.: USGS, 1972. 1:24,000. B

Unconsolidated materials are divided into four basic classes (gravel, sand and gravel, sand, fine-grained deposits) as a function of particle size. Exceptional areas also mapped include till, swamp deposits, landslide deposits, and artificial fill.

72. Pessl, Fred, Jr. and William H. Langer. Bedrock Geology, Hartford North Quadrangle. Connecticut. USGS MGIM I-784-B. Washington, D.C.: USGS, 1972. 1:24,000. B

Bedrock geology as differentiated from unconsolidated materials is shown along with inferred contact, inferred fault, and strike and dip of rock layers.

73. Ryder, Robert B. Contour Map of the Bedrock Surface, Hartford North Quadrangle. Connecticut. USGS MGIM I-784-C. Washington, D.C.: USGS, 1972. 1:24,000. B

The map shows the configuration of the bedrock surface in contour intervals of fifty feet if all unconsolidated earth materials were removed.

74. Handman, Elinor H. and C. T. Hildreth. Depth to Bedrock. Hartford North Quadrangle, Connecticut. USGS MGIM I-784-D. Washington, D.C.: USGS, 1972. 1:24,000. B

Depth to bedrock from the land surface is shown in eight classes ranging from less than ten feet to greater than 300 feet. Bedrock outcrops are also shown.

75. Langer, William H. Thickness of Principal Clay Unit. Hartford North Quadrangle, Connecticut. USGS MGIM I-784-E. Washington, D.C.: USGS, 1972. 1:24,000. B

The map shows the distribution and thickness of the principal clay unit in seven classes ranging from less than twenty-five to greater than 250.

76. ________. Thickness of Material Overlying Principal Clay Unit, Hartford North Quadrangle, Connecticut. USGS MGIM I-784-F. Washington, D.C.: USGS, 1972. 1:24,000. B

Thicknesses of materials overlying the principal clay unit to land surface are shown in four classes ranging from less than twenty to greater than sixty.

77. ________. Resources of Coarse Aggregate, Hartford North Quadrangle, Connecticut. USGS MGIM I-784-G. Washington, D.C.: USGS, 1972. 1:24,000. B

The map shows the distribution of the resources of coarse aggregate in three classes: gravel, sand and gravel, and basalt.

78. Baker, Rachel M. Landforms, Hartford North Quadrangle, Connecticut. USGS MGIM I-784-H. Washington, D.C.: USGS, 1972. 1:24,000. B

Landforms are illustrated in seven classes such as nearly level flood plains, gently undulating plains, strongly undulating plains, or elongate smooth low hills. Sand-dune hillocks and escarpments are also depicted.

79. Baker, Rachel M. and Catherine S. Stone. Natural Land Slopes, Hartford North Quadrangle, Connecticut. USGS MGIM I-784-I. Washington, D.C.: USGS, 1972. 1:24,000. B

Natural slopes are depicted in five classes ranging from less than three percent to twenty-five to forty-five percent. Artificial cuts or fills are also shown.

80. Thomas, Mendall P. Drainage Areas, Hartford North Quadrangle, Connecticut. USGS MGIM I-784-J. Washington, D.C.: USGS, 1972. 1:24,000. B

Drainage areas are shown along with number of square miles in each area that contribute to streamflow, stream gaging sites, outlets of surface water impoundments, surface-water sampling sites, and mouths of tributary streams.

81. Ryder, Robert B. Availability of Ground Water, Hartford North Quadrangle, Connecticut. USGS MGIM I-784-K. Washington, D.C.: USGS, 1972. 1:24,000. B

Ground water from unconsolidated deposits is shown in two classes; less than ten gallons per minute from individual wells, and well yields between ten and 200 gallons per minute if properly developed.

82. Handman, Elinor H. Depth to Water Table, Hartford North Quadrangle, Connecticut. USGS MGIM I-784-L. Washington, D.C.: USGS, 1972. 1:24,000. B

Depth to the water table from the land surface is portrayed in two categories; less than ten feet below the land surface at least part of the year; and more than ten feet below the land surface throughout the year.

83. Thomas, Mendall P. Flood-Prone Areas, Hartford North Quadrangle, Connecticut. USGS MGIM I-784-M. Washington, D.C.: USGS, 1972. 1:24,000. B

Flood-prone areas in feet above mean sea level are shown on the basis of a 1-in-100 chance on the average of occurring in any year.

84. Olin, Donald A. Low Flow of Streams, Hartford North Quadrangle. Connecticut. USGS MGIM I-784-N. Washington, D.C.: USGS, 1972. 1:24,000. B

Low flow of streams on the map is equivalent to the lowest average daily streamflow that can be expected for seven consecutive days on an average of once in ten years. Classes depicted, in cubic feet per second, range from less than 0.5 to greater than fifty.

85. Weiss, L. A. Maximum Concentration of Dissolved Solids in Surface Water. Hartford North Quadrangle, Connecticut. USGS MGIM I-784-O. Washington, D.C.: USGS, 1972. 1:24,000. B

Dissolved solids range in maximum concentrations, expressed as milligrams per liter, is in four classes ranging from less than 100 to greater than 500.

86. Hildreth, C. J. and C. H. Keune. Location of Wells and Test Holes, Hartford North Quadrangle, Connecticut. USGS MGIM I-784-P. Washington, D.C.: USGS, 1972. 1:24,000. B

87. Weiss, L. A. Sites of Solid-Waste Storage and Liquid Waste Discharge, Hartford North Quadrangle, Connecticut. USGS MGIM I-784-Q. Washington, D.C.: USGS, 1972. 1:24,000. B

Sites of solid-waste storage and of liquid-waste discharge (industrial and municipal) to surface water bodies and into the ground are shown.

88. Office of State Planning, State of Connecticut. Sanitary and Water-Related Facilities, Services, and Use, July 1970. Hartford North Quadrangle, Connecticut. USGS MGIM I-784-R. Washington, D.C.: USGS, 1972. 1:24,000. B

Water utility service areas, sewer service areas, sewage treatment plants, incinerators, and solid waste disposal sites are shown.

Folio of the Henry's Lake Quadrangle, Idaho-Montana

89. Witkind, Irving J. Geologic Map of the Henry's Lake Quadrangle, Idaho and Montana. USGS MGIM I-781-A. Washington, D.C.: USGS, 1972. 2 sheets, 1:62,500. B

90. ________. Generalized Slope Map of the Henry's Lake Quadrangle, Idaho and Montana. USGS MGIM I-781-B. Washington, D.C.: USGS, 1972. 1:62,500. B

Slope is broken down into five categories and expressed in each category as percentage, angle, and ratio. Percentages range from less than five to forty-five and above.

91. ________. Map Showing Seiche, Rockslide, Rockfall, and Earthflow Hazards in the Henry's Lake Quadrangle, Idaho and Montana. USGS MGIM I-781-C. Washington, D.C.: USGS, 1972. 1:62,500. B

Map depicts geologic events which will occur if area is shaken by a major local earthquake. The combined geologic hazards are grouped into three categories; very likely, likely and unlikely.

92. ________. Map Showing Faults and Ground-Breakage Hazards in the Henry's Lake Quadrangle, Idaho and Montana. USGS MGIM I-781-D. Washington, D.C.: USGS, 1972. 1:62,500. B

Degree of ground-breakage is grouped into three categories; major, moderate, and minor in case of a major earthquake. Types of breakage are fault scarps and shaking of loose unconsolidated materials.

93. ________. Earthquake Hazard Map of the Henry's Lake Quadrangle, Idaho and Montana. USGS MGIM I-781-E. Washington, D.C.: USGS, 1972. 1:62,500. B

A composite of maps I-781-C and -D. The area is divided into four major hazard zones; double major hazard, single major hazard, moderate, and low.

94. __________. Map Showing Construction Materials in the Henry's Lake Quadrangle, Idaho and Montana. USGS MGIM I-781-F. Washington, D.C.: USGS, 1972. 1:62,500. B

Thirteen types of geologic materials are mapped, related to a chart, and rated as to desirability for types of possible industrial uses.

95. __________. Map Showing Relative Ease of Excavation of Geologic Units in the Henry's Lake Quadrangle, Idaho and Montana. USGS MGIM I-781-G. Washington, D.C.: USGS, 1972. 1:62,500. B

Two major categories are used for excavation ease; common-requiring no explosives, and rock-requiring blasting. Each major category is then sub-divided into easy, moderate, and difficult.

96. __________. Map Showing Geologic Constraints on the Placement of Sanitary Landfills in the Henry's Lake Quadrangle, Idaho and Montana. USGS MGIM I-781-H. Washington, D.C.: USGS, 1972. 1:62,500. B

The fifty-one geologic units mapped in the Henry's Lake Quadrangle are grouped into four categories of favorability for sanitary landfill sites. A scoring matrix is provided matching six major constraints for landfills to types of geologic units.

97. Witkind, Irving J., Paul A. Hoskins, Vergil L. Lindsey and E. L. Mitchell. Map Showing Snow Avalanche Probabilities in the Henry's Lake Quadrangle, Idaho and Montana. USGS MGIM I-781-I. Washington, D.C.: USGS, 1972. 1:62,500. B

Folio of Knox County, Tennessee

98. Harris, Leonard. Land Slopes and Urbanization in Knox County, Tennessee. USGS MGIM I-767-A. Washington, D.C.: USGS, 1972. 1:125,000. B

Land surface in the county is divided into three categories based on the percent of slopes: (1) areas in which slopes are twelve percent or less; (2) areas in which slopes are variable and range from one to greater than twelve percent; and (3) areas in which slopes of greater than twelve percent are predominant.

99. Geologic Map of Knox County, Tennessee. USGS MGIM I-767-B. Washington, D.C.: USGS, 1972. 1:125,000. D

100. Harris, Leonard D. Distribution of Sedimentary Rocks in Knox County, Tennessee. USGS MGIM I-767-C. Washington, D.C.: USGS, 1972. 1:125,000. A

Sedimentary rocks are grouped according to type as opposed to chronology.

101. ________. Structure Map of Knox County, Tennessee. USGS MGIM I-767-D. Washington, D.C.: USGS, 1972. 1:125,000. A

Geologic structure of the area is presented, along with a good pictorial presentation and explanation of terms such as strike, dip, faulting, anticlines, and synclines.

102. McMaster, W. H. Ground-Water Yield Potential in Knox County, Tennessee. USGS MGIM I-767-E. Washington, D.C.: USGS, 1973. 1:125,000. D

103. Harris, Leonard D. Areas with Abundant Sinkholes in Knox County, Tennessee. USGS MGIM I-767-F. Washington, D.C.: USGS, 1973. 1:125,000. B

Area underlain by dolomite and limestone subject to sinkholes is delineated, along with diagrams and text showing development of a karst surface with an underground drainage system and construction problems in karst terrains.

104. ________. Basins Drained by Sinkholes in Knox County, Tennessee. USGS MGIM I-767-G. Washington, D.C.: USGS, 1973. 1:125,000. B

Basins drained by sinkholes which may flood in heavy rains, particularly with increased runoff and sedimentation problems due to urbanization, are shown.

105. Soil Association Map of Knox County, Tennessee. USGS MGIM I-767-H. Washington, D.C.: USGS, 1972. 1:125,000. B

106. Harris, Leonard D. Physical Characteristics of Soils in Knox County, Tennessee. USGS MGIM I-767-I. Washington, D.C.: USGS, 1972. 1:125,000. B

Various soil profiles with their engineering characteristics of particle size, maximum dry density, pH, plastic index, and liquid limit are given along with a soil unit map.

107. Harris, Leonard D. and John M. Kellberg. Overburden Related to Type of Bedrock and Engineering, Characteristics of the Bedrock, Knox County, Tennessee. USGS MGIM I-767-J. Washington, D.C.: USGS, 1972. 1:125,000. B

Sheet 1 locates types of bedrock and typical overburden depth while sheet 2 utilizes a matrix to relate a rock unit to characteristics such as thickness, unit weight, compressive strength, behavior of slope in artificial cuts, and common problems.

108. ________. Engineering Characteristics of Overburden in Knox County, Tennessee. USGS MGIM I-767-K. Washington, D.C.: USGS, 1972. 1:125,000. B

Types of surficial unconsolidated materials are mapped and related to the Unified Soil Classification System, particle size distribution (in percent), unit dry wright, and permeability for foundation value and compaction.

109. Harris, Leonard D. Categories of Relative Feasibility for Septic Tank Filter Fields in Knox County, Tennessee. USGS, MGIM I-767-L. Washington, D.C.: USGS, 1972. 1:125,000. C

Percolation rate, soil thickness, percent of soil in certain slope categories, and ground water level are evaluated in respect to soil associations to yield a relative feasibility ranking.

110. ________. Areas of Possible Flooding in Knox County, Tennessee. USGS MGIM I-767-M. Washington, D.C.: USGS, 1973. 1:125,000. B

111. Harris, Leonard D. and Robert A. Laurence. Mineral Resources of Knox County, Tennessee. USGS MGIM I-767-N. Washington, D.C.: USGS, 1974. 1:125,000. B

Folio of the Morrison Quadrangle, Colorado

112. Scott, Glenn R. Geologic Map of the Morrison Quadrangle, Jefferson County, Colorado. USGS MGIM I-790-A. Washington, D.C.: USGS, 1972. 1:24,000. B

113. ________. Map Showing Landslides and Areas Susceptible to Landsliding in the Morrison Quadrangle, Jefferson County, Colorado. USGS MGIM I-790-B. Washington, D.C.: USGS, 1972. 1:24,000. B

Three groupings are given; active landslides, landslide deposits on steep slopes, and areas susceptible to sliding.

114. ________. Map Showing Areas Containing Swelling Clay in the Morrison Quadrangle, Jefferson County, Colorado. USGS MGIM I-790-C. Washington, D.C.: USGS, 1972. 1:24,000. B

The area is divided into three geologic groupings based on the swelling pressure of clays expressed as potential volume change. Groupings are areas of geologic units having pressures higher than 2,500 pounds per square foot, areas underlain by five or more feet of nonswelling surficial deposits which may then by underlain by units with swelling pressures higher than 2,500, and areas of no or slight swelling pressures.

115. ________. Map Showing Potential Source Areas for Non-Metallic Mineral Resources, Morrison Quadrangle, Jefferson County, Colorado. USGS MGIM I-790-D. Washington, D.C.: USGS, 1972. 1:24,000. B

Nine categories of non-metallic mineral resources are portrayed, including coal, clay, gravels, sand, and potential sources of crushed aggregate and riprap.

116. Scott, Glenn R. Map Showing Some Points of Geologic Interest in the Morrison Quadrangle, Jefferson County, Colorado. USGS MGIM I-790-E. Washington, D.C.: USGS, 1972. 1:24,000. B

Fossil deposits, topographic features, and unique geologic units are portrayed and may be related to potential scenic or recreational areas.

117. ________. Map Showing Watercourses and Areas Inundated by Historic Floods in the Morrison Quadrangle, Jefferson County, Colorado. USGS MGIM I-790-F. Washington, D.C.: USGS, 1972. 1:24,000. B

Watercourses subject to flash floods and flood areas of known maximum inundation are portrayed.

118. ________. Map Showing Inferred Relative Permeability of Geologic Materials in the Morrison Quadrangle, Jefferson County, Colorado. USGS MGIM I-790-G. Washington, D.C.: USGS, 1972. 1:24,000. B

Folio of the Parker Quadrangle, Colorado

119. Maberry, John O. and Robert M. Lindvall. Geologic Map of the Parker Quadrangle, Arapahoe and Douglas Counties, Colorado. USGS MGIM I-770-A. Washington, D.C.: Government Printing Office, 1972. 1:24,000. B

120. __________, Map Showing Areas of Past Flooding in the Parker Quadrangle, Arapahoe and Douglas Counties, Colorado. USGS MGIM I-770-B. Washington, D.C.: Government Printing Office, 1972. 1:24,000. B

121. __________. Map Showing Transportation Routes in the Parker Quadrangle, Arapahoe and Douglas Counties, Colorado. USGS MGIM I-770-C. Washington, D.C.: USGS, 1972. 1:24,000. B

Roads are shown as interstate highway, two-lane paved, two-lane improved, two-lane unimproved, along with bridges, culverts, and utility lines.

122. __________. Map Showing Relative Swelling-Pressure Potential of Geologic Materials in the Parker Quadrangle, Arapahoe and Douglas Counties, Colorado. USGS MGIM I-770-D. Washington, D.C.: USGS, 1972. 1:24,000. B

Swelling-pressure potential of geologic units are shown in four classes; extremely high (over 7,500 pounds per square foot), moderage to high (3,000-7,500), low to high (2,700-4,700), mostly low (under 2,500).

123. __________. Map Showing Landslide Deposits and Areas of Potential Landsliding in the Parker Quadrangle, Arapahoe and Douglas Counties, Colorado. USGS MGIM I-770-E. Washington, D.C.: USGS, 1972. 1:24,000. B

Known landslide deposits, areas with relatively high potential for large slides, and areas with relatively high potential for small earthflows are expressed.

124. __________. Slope Map of the Parker Quadrangle, Arapahoe and Douglas Counties, Colorado. USGS MGIM I-770-F. Washington, D.C.: USGS, 1972. 1:24,000. B

Slope is expressed in five categories ranging from less than three percent to greater than fifteen percent. Criteria for uses related to slope is given.

125. __________. Map Showing Relative Erodibility of Geologic Materials in the Parker Quadrangle, Arapahoe and Douglas Counties, Colorado. USGS MGIM I-770-G. Washington, D.C.: USGS, 1972. 1:24,000. B

As a guide to land use planning, relative erodibility of geologic materials is expressed as high, moderate, and low.

126. ________. Map Showing Relative Excavatability of Geologic Materials in the Parker Quadrangle, Arapahoe and Douglas Counties, Colorado. USGS MGIM I-770-H. Washington, D.C.: USGS, 1972. 1:24,000. B

The interpretations of ease of excavation generally apply to broad areas for planning purposes rather than to specific sites. Categories are easy, moderate and difficult.

127. ________. Map Showing Inferred Relative Permeability of Geologic Materials in the Parker Quadrangle, Arapahoe and Douglas Counties, Colorado. USGS MGIM I-770-I. Washington, D.C.: USGS, 1972. 1:24,000. B

Relative inferred permeability is expressed as high, intermediate, and low.

128. ________. Map of Deposits Especially Susceptible to Compaction or Subsidence, Parker Quadrangle, Arapahoe and Douglas Counties, Colorado. USGS MGIM I-770-J. Washington, D.C.: USGS, 1972. 1:24,000. B

Three different types of geologic materials, loess, eolian sand, and alluvium are portrayed, along with a discussion of their strength properties.

129. Maberry, John O. and Eugene R. Hampton. Map Showing Approximate Ground-Water Conditions in the Parker Quadrangle, Arapahoe and Douglas Counties, Colorado. USGS MGIM I-770-K. Washington, D.C.: USGS, 1972. 1:24,000. B

Groundwater is expressed as two areas; large amounts of water at less than 150 feet, and low to moderate amounts at less than 800 feet.

130. Maberry, John O. Map Showing Construction Materials Resources in the Parker Quadrangle, Arapahoe and Douglas Counties, Colorado. USGS MGIM I-770-L. Washington, D.C.: USGS, 1973. 1:24,000. B

131. ________. Map of Pioneer Trails, Stage Stops, and Areas with a View in the Parker Quadrangle, Arapahoe and Douglas Counties, Colorado, USGS MGIM I-770-M. Washington, D.C.: USGS, 1973. 1:24,000. B

132. Keith, John R. and John O. Maberry, Vegetation Map of the Parker Quadrangle, Arapahoe and Douglas Counties, Colorado. USGS MGIM I-770-N. Washington, D.C.: USGS, 1973. 1:24,000. B

Folio of the Salina Quadrangle, Utah

133. Williams, Paul and Robert J. Hackman. Geology, Structure, and Uranium Deposits of the Salina Quadrangle, Utah. USGS MGIM I-591. Washington, D.C.: Government Printing Office, 1971. 1:250,000. B

134. Covington, Harry R. Topographic Relief Map of the Salina Quadrangle, Utah. USGS MGIM I-591-C. Washington, D.C.: USGS, 1972. 1:250,000. B

Topographic relief is color portrayed at thousand foot intervals from less than 4,000 to greater than 11,000 feet.

135. Covington, Harry R. and Paul L. Williams. Map Showing Normal Annual and Monthly Precipitation in the Salina Quadrangle, Utah. USGS MGIM I-591-D. Washington, D.C.: USGS, 1972. 1:250,000. B

Annual average precipitation, in inches, 1930-1960, is shown in contour and colors ranging from less than six inches to greater than thirty.

136. Covington, Harry R. Map Showing Length of Freeze-Free Season in the Salina Quadrangle, Utah. USGS MGIM I-591-E. Washington, D.C.: USGS, 1972. 1:250,000. B

Contours and colors show the average number of days between the last spring freeze (temperature 32° F or below) and the first autumn freeze in eleven classes ranging from twenty to 200 days.

137. Covington, Harry R. and Paul L. Williams. Surface Water Map of the Salina Quadrangle, Utah. USGS MGIM I-591-F. Washington, D.C.: USGS, 1972. 1:250,000. B

Streamflow is shown in acre-feet per month by inset histograms.

138. Covington, Harry R. Map Showing Springs in the Salina Quadrangle, Utah. USGS MGIM I-591-G. Washington, D.C.: USGS, 1972. 1:250,000. B

About 450 springs are located, some with dissolved solids and yield data.

139. Williams, Paul L. Map Showing Types of Bedrock and Surficial Deposits, Salina Quadrangle, Utah. USGS MGIM I-591-H. Washington, D.C.: USGS, 1972. 1:250,000. B

140. Hackman, Robert J. Maps Showing Extent and Thickness of Coal Beds and Amount of Overburden on Coal Beds in the Salina Quadrangle, Utah. USGS MGIM I-591-I. Washington, D.C.: USGS, 1972. 1:250,000. B

Four coal fields are portrayed in beds of one foot or more thick along with coal outcrops and mine locations.

141. Williams, Paul L. Map Showing Relative Ease of Excavation in the Salina Quadrangle, Utah. USGS MGIM I-591-J. Washington, D.C.: USGS, 1972. 1:250,000. B

Map shows relative ease (or difficulty) with which rocks and surficial deposits can be excavated ranging in five categories from very easy to very difficult.

142. Price, Donald. Map Showing General Chemical Quality of Ground Water in the Salina Quadrangle, Utah. USGS MGIM I-591-K. Washington, D.C.: USGS, 1972. 1:250,000. B

Area is mapped on the basis of milligrams per liter in five categories ranging from less than 500 to 1,000-3,000.

143. Williams, Paul L. Map Showing Landslides and Areas of Potential Landsliding in the Salina Quadrangle, Utah. USGS MGIM I-591-L. Washington, D.C.: USGS, 1972. 1:250,000. B

Landslide units mapped are known landslide deposits, old deposits of probable landslide origin and other surficial deposits that are unstable under certain conditions, areas of rockfall probability, and areas of no landslide probability or slight probability.

144. Price, Donald. Map Showing General Availability of Ground Water in the Salina Quadrangle, Utah. USGS MGIM I-591-M. Washington, D.C.: USGS, 1972. 1:250,000. B

The area is divided into three units based on a gallons per minute yield; ten or less, five to fifty, and fifty to 1,000.

145. Hackman, Robert J. and Paul L. Williams. Map Showing Drainage Basins and Historic Cloudburst Floods in the Salina Quadrangle, Utah. USGS MGIM I-591-N. Washington, D.C.: USGS, 1972. 1:250,000. B

Drainage basins, drainage basin boundaries, and location and number of recorded cloudburst floods are shown.

146. Williams, Paul L. and Harry R. Covington. Map Showing Scenic Features and Recreation Facilities of the Salina Quadrangle, Utah. USGS MGIM I-591-O. Washington, D.C.: USGS, 1973. 1:250,000. B

Recreation sites and facilities are related to topographic groupings such as badlands of multicolored cliffs and benches, canyon lands, desert with sand dunes, and high sagebrush plateaus.

147. Hackman, Robert J. Vegetation Map of the Salina Quadrangle, Utah. USGS MGIM I-591-P. Washington, D.C.: USGS, 1973. 1:250,000. B

Folio of the Sugar House Quadrangle, Utah

148. Van Horn, Richard. Surficial Geologic Map of the Sugar House Quadrangle, Salt Lake County, Utah. USGS MGIM I-766-A. Washington, D.C.: USGS, 1972. 1:24,000. B

149. ________. Map Showing Relative Ages of Faults in the Sugar House Quadrangle, Salt Lake County, Utah. USGS MGIM I-766-B. Washington, D.C.: Government Printing Office, 1972. 1:24,000. B
Faults are divided into four categories; faults along which some movement has probably occured in the last 5,000 years, movement between 3,000 and 5,000 years, inactive faults, and inactive thrust faults of ancient origin.

150. ________. Slope Map of the Sugar House Quadrangle, Salt Lake County, Utah. USGS MGIM I-766-C. Washington, D.C.: USGS, 1972. 1:24,000. B

Slope is expressed as a percentage in five classes ranging from less than three to greater than forty-five percent.

151. ________. Landslide and Associated Deposits Map of the Sugar House Quadrangle, Salt Lake County, Utah. USGS MGIM 1-766-D. Washington, D.C.: USGS, 1972. 1:24,000. B

Landslides are differentiated into type and then grouped into three classes; landslide deposits which have probably moved in the last 5,000 years, inactive landslide deposits within the last 5,000 years, and areas subject to possible mudflows during flash floods.

152. _________. Relative Slope Stability Map of the Sugar House Quadrangle, Salt Lake County, Utah. USGS MGIM I-766-E. Washington, D.C.: USGS, 1972. 1:24,000. B

Criteria for material as related to percent slope is given, and five mapping units are portrayed from most stable to potentially unstable.

153. _________. Construction Materials Map of the Sugar House Quadrangle, Salt Lake County, Utah. USGS MGIM I-766-F. Washington, D.C.: USGS, 1973. 1:24,000. B

A matrix is provided relating type of deposit to suitability for different uses.

154. _________. Map Showing Urban Growth in the Sugar House Quadrangle, Salt Lake County, Utah. USGS MGIM I-766-G. Washington, D.C.: USGS, 1973. 1:24,000. B

155. Mower, R. W. Map Showing Thickness of Saturated Quaternary Deposits, Sugar House Quadrangle, Salt Lake County, Utah, February 1972. USGS MGIM I-766-H. Washington, D.C.: USGS, 1973. 1:24,000. B

156. Mower, R. W. and Richard Van Horn. Map Showing Minimum Depth to Water in Shallow Aquifers (1963-72) in the Sugar House Quadrangle, Salt Lake County, Utah. USGS MGIM I-766-I. Washington, D.C.: USGS, 1973. 1:24,000. B

157. _________. Map Showing Depth to Top of the Principal Aquifer, Sugar House Quadrangle, Salt Lake County, Utah, February 1972. USGS MGIM I-766-J. Washington, D.C.: USGS, 1973. 1:24,000. B

158. _________. Map Showing Concentration of Dissolved Solids in Water From the Principal Aquifer, Sugar House Quadrangle, Salt Lake County, Utah. USGS MGIM I-766-K. Washington, D.C.: USGS, 1973. 1:24,000. B

159. _________. Map Showing Configuration of the Potentiometric Surface of the Principal Aquifer and Its Approximate Position Relative to Land Surface, Sugar House Quadrangle, Salt Lake County, Utah, February 1973. USGS MGIM I-766-L. Washington, D.C.: USGS, 1973. 1:24,000. B

160. McGregor, Edward E., Richard Van Horn and Ted Arnow. Map Showing the Thickness of Loosely Packed Sediments and the Depth to Bedrock in the Sugar House Quadrangle, Salt Lake County, Utah. USGS MGIM I-766-M. Washington, D.C.: USGS, 1974. 1:24,000. B

Surficial unconsolidated sediments are divided into and portrayed as three relative classes of firmness which are pertinent in determining engineering foundations and settlement potential.

161. Van Horn, Richard and F. K. Fields. Map Showing Flood and Surface Water Information in the Sugar House Quadrangle, Salt Lake County, Utah. USGS MGIM I-766-N. Washington, D.C.: USGS, 1974. 1:24,000. B

Folio of West - Central King County, Washington

162. Miller, Robert D. Map Showing Relative Slope Stability in Part of West - Central King County, Washington. USGS MGIM I-852-A. Washington, D.C.: USGS, 1973. 1:48,000. B

The diverse topographic area is separated into three classes of slope stability; terrain free of stability problems (class 1); terrain normally stable under natural conditions but which may become unstable through man's activities (class 2), and terrain inherently unstable (class 3). Class 2 slopes are generally steeper than 15% but are not underlain by clay beds, while class 3 slopes are steeper than 15% and underlain by clay beds.

163. Tubbs, Donald W. Landslides and Associated Damage During Early 1972 in Part of West - Central King County, Washington. USGS MGIM I-852-B. Washington, D.C.: USGS, 1974. 1:48,000. B

Eighty landslides, causing over $250,000 in direct damages, are located, along with a discussion of natural and man-induced factors contributing to stability failure.

164. Miller, Robert D. Map Showing Relative Compressibility of Earth Materials in Part of West - Central King County, Washington. USGS MGIM I-582-C. Washington, D.C.: USGS, 1974. 1:48,000. B

Earth materials are divided into four relative classes of compressibility and related to their suitability for foundations. Grain size, estimated porosity, and content of organic material were felt to be the most critical physical properties from which to infer potential compressibility. Standard penetration tests were performed.

165. Frizzell, V. A., Jr. Reconnaissance Photointerpretation Map of Landslides in Parts of the Hopland, Kelseyville and Lower Lake 15-Minute Quadrangles, Sonoma County, California. USGS MFSM MF-594. Washington, D.C.: USGS, 1974. 1:62,500. D

166. Frizzel, V. A., et al. Preliminary Photointerpretation Map of Landslide and Other Surficial Deposits of the Mare Island and Carquinez Strait 15-Minute Quadrangles, Contra Costa, Marin, Napa, Solano, and Sonoma Counties, California. USGS MFSM MF-595. Washington, D.C.: USGS, 1974. 1:62,500. D

167. Frye, John C. Geological Information for Managing the Environment. ISGS EGN No. 18. Urbana, Illinois: ISGS, 1967. 12. B

An advocacy discussion of environmental urgencies confronting modern society. The ways in which scientific data can be applied to plan the environment, specifically geologic data, are covered. Components of the earth sciences and their applicability to land use choices are reviewed.

168. __________. A Geologist Views the Environment. ISGS EGN No. 42. Urbana, Illinois: ISGS, 1971. 9. B

A discussion of the earth scientist's role in managing natural resources. Data collection for planning land use, waste disposal facility development, water supply planning, and mineral material availability are covered in terms of criteria for research, component parts, communication, and environmental consequences.

169. Furumoto, Augustine S. "Use of Historical Information for Zoning and Microzoning in the Absence of Instrumental Data: Case of Hawaii." In Proceedings of the International Conference on Microzonation for Safer Construction Research and Application, Seattle, Washington, October 30-November 3, 1972, Vol. I, pp. 425-435. Seattle, Washington: National Science Foundation et al, 1972. B

Review of historical information predating seismic instrumentation revises the seismic zoning map for Hawaii.

170. Gabrysch, R. K. and C. W. Bonnet. Land-Surface Subsidence in the Houston-Galveston Region, Texas. USGS OFR 74-123. 1974. 37. D

171. Gates, Gary R. Geologic Considerations in Urban Planning for Bloomington, Indiana. Indiana Department of Conservation Geological Survey Report of Progress No. 25. Bloomington, Indiana: State of Indiana, 1962. 21pp. plus plate. B

Geology is applied to many urban development planning problems in evaluating land use for mineral resources, water supply, sewage disposal, flood control, and construction. Basic geology of the area is outlined and use and economic demand for mineral resources plus general engineering criteria for development is given.

172. Gaus, Michael P. and Mehmet A. Sherif. "Zonation and Microzonation." In Proceedings of the International Conference on Microzonation for Safer Construction Research and Application, Seattle, Washington, October 30-November 3, 1972, Vol. I, pp. 3-11. Seattle, Washington: National Science Foundation et al, 1972. B

To more finely plot land areas subject to seismic hazard a mathematical model, termed Earthquake Damage Potential, is proposed.

173. Giulluly, James, A. G. Waters and A. O. Woodford. Principles of Geology. 2d ed. San Francisco: W. H. Freeman and Co., 1959. 534. A

A basic geologic text with historical vignettes for reading interest.

174. Glancy, Patrick A. "Mudflow in the Second Creek Drainage, Lake Tahoe Basin, Nevada, and Its Relation to Sedimentation and Urbanization." In Geological Survey Research 1969: Chapter C, pp. C195-C200. USGS PP 650-C. Washington, D.C.: Government Printing Office, 1969. B

A mudflow of over 50,000 cubic yards occurred in August of 1967 in the 1.5 square mile Second Creek Drainage basin of Lake Tahoe, Nevada. Although the mudflow originated naturally in the upper watershed due to steep slopes, sparse vegetation, and an intense storm, housing development in the lower, flatter area of the drainage suffered costly damage. Damages were increased by manmade stream-channel and land surface modifications which retarded efficient passage of the debris.

175. Goldman, Harold B., ed. Geologic and Engineering Aspects of San Francisco Bay Fill. State of California Division of Mines and Geology Special Report 97. San Francisco: State of California, 1969, 130pp with plates (see related subject and geographic material 5, 6, 248, 249, 251, 254, 268, 269). B

A comprehensive report covering geology, salt, sand, and shell deposits, bay mud deposits and their structural foundation stability, earthquake hazards associated with bay muds, and safety of fills.

176. Grant, U. S. "Subsidence of the Wilmington Oil Field, California," in Geology of Southern California: Chapter X- Engineering Aspects of Geology, ed. Richard H. Jans, pp. 19-24. State of California Division of Mines Bulletin 170. San Francisco: State of California, 1954. B

A brief review of the geologic structure and mathematical modeling in ground subsidence due to withdrawal of subsurface fluids.

177. Gross, David L. Geology for Planning in DeKalb County, Illinois. ISGS EGN No. 33. Urbana, Illinois: ISGS, 1970. 26. C

Geologic data was assembled for planning purposes. Differentiation and analysis of all geologic units, evaluation of the geologic units for mineral resources and engineering and hydrologic properties, and preparation of suitability use geologic maps were carried out on a scale of 1:250,000.

178. Hack, J. T. Geologic Map for Land Use Planning, Prince Georges County, Maryland. USGS OFR 75-208. 1975. 1:62,500. D

179. ________. Map of Construction Conditions, Prince Georges County, Maryland. USGS OFR 75-209. 1975. 1:62,500. D

180. ________. Map of Mineral Resources, Prince Georges County, Maryland. USGS OFR 75-210. 1975. 1:62,500. D

181. Hackett, James E. An Application of Geologic Information to Land Use in the Chicago Metropolitan Region. ISGS EGN No. 8. Urbana, Illinois: ISGS, 1966. 6. C

Application of geologic information to land planning exemplified by land acquisition for a forest preserve in a metropolitan area. Geology was utilized to ascertain presence of mineral resources, ground water resources, reservoir potential, and waste disposal suitability. Multiple use was stressed through division of study area into geological suitability groups which were value rated.

182. __________. Geologic Factors in Community Development at Naperville, Illinois. ISGS EGN No. 22. Urbana, Illinois: ISGS, 1968. 16. C

Data on geology, ground-water resources, stream flow and extent of flooding is assembled and related to planning for community development in Naperville, Illinois (population 18,734). Excavation and foundation characteristics, water quality and supply, and flood plain areas are tied to their best land use and development patterns.

183. Hackett, James E. and Murray R. McComas. Geology for Planning in McHenry County. ISGS C 438. Urbana, Illinois: ISGS, 1969. 29. C

A study on the collection and interpretation of geologic data for land planning purposes on a county basis. Procedures include detailed unit mapping, evaluation of unit properties, preparation of interpretative maps for specific land uses, and evaluation and grading of land units for their suitability for various uses. Data developed is adequate to establish relationships among mineral and hydrologic resource factors for application in the regional plan.

184. Hanf, Kenneth and Geoffrey Wandesforde-Smith. Institutional Design and Environmental Management: The Tahoe Regional Planning Agency. Institute of Government Affairs Research Reports No. 24. Davis, California: Institute of Governmenta Affairs, 1972. 44. E

The viability (or lack thereof) of a regional planning agency with environmental protectionist goals is reviewed from an administrative political viewpoint using the Lake Tahoe Regional Planning Agency as a case example.

185. Harvey, E. J. and John H. Skelton. "Hydrologic Study of a Waste-Disposal Problem in the Karst Area at Springfield, Missouri." In Geological Survey Research 1968: Chapter C, pp. C217-C220. USGS PP 600-C. Washington, D.C.: Government Printing Office, 1968. A

An area immediately south of the sewage treatment plant for Springfield, Missouri is characterized by limestone strata with numerous solution channels, fissures, and caves. Sewage effluent released at the plant into Wilson Creek travels underground and re-emerges as a pollutant in Rader Spring, 1.4 miles to the southwest.

186. Hayward Earthquake Study. Hayward, California: City of Hayward, 1972. 50.

A two-part report, the first area examines the geological factors associated with earthquakes and reviews earthquake experience in urbanized areas of the Western United States; the second part focuses on the city of Hayward, California, giving a geological reconnaissance of the Hayward Planning Area, a historical summary of local earthquakes, and recommendations to reduce seismic risks. With bibliography.

187. Hough, B. K. Basic Soils Engineering. New York: The Ronald Press Co., 1957. 513. A

A basic textbook for the engineer on soils. Index properties, soil moisture and structure,, stress and strengths, foundation and pavement suitability, and investigation and testing are covered.

188. Hughes, George M. Selection of Refuse Disposal Sites in Northeastern Illinois. ISGS EGN No. 27. Urbana, Illinois: ISGS, 1967. 18. B

Geologic environments in northeastern Illinois were evaluated in terms of results of studies on refuse disposal and groundwater contamination elsewhere. Safe geologic environments for refuse disposal are those with materials of low permeability and which are relatively dry. With bibliography.

189. Hunt, Roy E. "The Geologic Environment: Definition by Remote Sensing." In Proceedings of the International Conference on Microzonation for Safer Construction Research and Application, Seattle, Washington, October 30-November 3, 1972, Vol. II, pp. 576-592. Seattle, Washington: National Science Foundation et al, 1972 (see related subject material 256). A

Techniques and sources (photos, ERTS, infrared film, and radar) of remote sensing are outlined, along with procedures for synthesizing information. Four geologic case studies are given.

190. __________. "Round Rock, Texas New Town: Geologic Problems and Engineering Solutions." BAEG 10, No. 3, Summer 1973, 231-242. C

A new town area in Texas was sited in an area of limestone with solution cavities and expansive clays. Geologic conditions were evaluated for preliminary foundation design criteria and to prepare cost estimates for site grading, excavation for utilities, and the support of structures and pavements.

191. Interpreting Ground Conditions from Geologic Maps. USGS C 46. Washington, D.C.: Government Printing Office, 1949. 10 (see related subject material 33, 236, 287). B

Topographic and geologic maps are distinguished, and the base geologic map is manipulated to present geological history, construction materials, excavation conditions, and hydrologic and soil conditions.

192. Johnson, A. I., R. P. Moston and D. A. Morris. Physical and Hydrologic Properties of Water-Bearing Deposits in Subsiding Areas in Central California. USGS PP 492-A. Washington, D.C.: Government Printing Office, 1968. A71pp. plus plates. B

An intensive study of subsurface deposits subject to compaction in the San Joaquin Valley of central California. Laboratory tests for particle-size analysis, permeability, dry unit weight, specific gravity, porosity and void ratio, moisture content, Atterberg limits, and shrinkage factors were run and presented in tabular and graphic form.

193. Kansas Geological Survey Study Committee. A Pilot Study of Land-Use Planning and Environmental Geology. Lawrence, Kansas: University of Kansas and State Geological Survey of Kansas "701" Project No. Kans. P-43 Report No. 15 D, 1968. 63. C

An area around Lawrence, Kansas was studied in an attempt to determine best land use. Community inventory, field data collection, laboratory analysis, and factor map compilation are covered. Emphasis is on methodology.

194. Kaye, Clifford A. "Geology and Our Cities." Transactions of the New York Academy of Sciences (serial II) 30, No. 8, June 1968, 1045-1051. B

The history of urban geology and of the types of geological applications in the United States is reviewed. The use and problems of urban geology to planning is covered.

195. Knight, F. James. "Geologic Problems of Urban Growth in Limestone Terrains of Pennsylvania." BAEG 8, No. 1, Spring 1971, pp. 91-101 plus plate. B

A discussion of the geophysical processes causing sinkholes and solution cavities in a limestone area in Pennsylvania is presented and case histories of development problems in limestone solution areas are previewed.

196. Landon, Ronald A. Geologic Studies as an Aid to Ground-Water Management. ISGS EGN No. 14. Urbana, Illinois: ISGS, 1967. 9. B

A preliminary geologic evaluation of an area where management of ground-water resources is contemplated can be made from existing maps, water well logs, and engineering borings. Using northeastern Illinois as an example, criteria are established and applied to geologic information to assess possibilities of natural and artificial ground-water recharge.

197. Larsen, Jean I. and James E. Hackett. Activities in Environmental Geology in Northeastern Illinois. ISGS EGN No. 3. Urbana, Illinois: ISGS, 1965. 5. B

A review of the activities of the northeastern office of the Illinois State Geological Survey for the application of geologic information to human occupancy and land use problems. Studies included open-space planning, refuse disposal, waste disposal related to water pollution, ground water geology, and a shallow flow system.

198. Lee, Douglas B., Jr. "Requiem for Large Scale Models." Journal of the American Institute of Planners, 39, No. 3, May 1973, 163-178. E

The development of the large scale urban, or activity allocation model, is reviewed. Problems in logic and practice are given, with examples of failures.

199. Leet, L. Donald and Sheldon Judson. Physical Geology. 2d ed. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1958. 502. A

A basic geologic text covering rock types and processes with glossary and appendices. Stress is on terminological explanations.

200. Legget, Robert E. Cities and Geology. New York: McGraw-Hill Book Co., 1973. 624. C

In this extensive treatise geology is given wide definition to include soil and hydrologic aspects. Extensive examples of geology in respect to development in urban areas is given, with emphasis on engineering aspects and metallic and non-metallic resources. With illustrations and extensive bibliography.

201. Lemke, R. W. Reconnaissance Engineering Geology of the Ketchikan Area, Alaska, with Emphasis on Evaluation of Earthquake and Other Geologic Hazards. USGS OFR 75-250. 1975. 110pp. plus plate.

202. Lofgren, Ben E. "Analysis of Stresses Causing Land Subsidence." In Geological Survey Research 1968: Chapter B, pp. B219-B225. USGS PP 600-B. Washington, D.C.: Government Printing Office, 1968 (see related subject and geographic material 12, 13, 14, 15, 16, 203, 204, 205, 215, 216, 217, 220, 238, 239, 240, 260). B

The mechanics of land subsidence is discussed for the San Joaquin Valley area of central California. Accelerated pumping of ground water for irrigation has caused 3,000 square miles of land to subside.

203. __________. "Land Subsidence Due to the Application of Water." In Reviews in Engineering Geology. Vol. II, ed. David J. Varnes and George Kiersch, pp. 271-303. Boulder, Colorado: Geological Society of America, 1969 (see related subject and geographic material 12, 13, 14, 15, 16, 202, 204, 215, 216, 217, 220, 238, 239, 240, 260). B

A fairly technical review of known land subsidence situations due to hydro-compaction of either alluvial or loessial deposits with identification of susceptible regions in the United States. With bibliography.

204. __________. Land Subsidence Due to Ground-Water Withdrawal, Arvin-Maricoper Area, California. USGS PP 437-D. Washington, D.C.: Government Printing Office, 1975. D 55 (see related subject and geographic material 12, 13, 14, 15, 16, 202, 203, 205, 215, 216, 217, 220, 238, 239, 240, 260). D

205. Lofgren, Ben E. and R. L. Klausing. Land Subsidence Due to Ground-Water Withdrawal Tulare-Wasco Area California. USGS PP 437-B. Washington, D.C.: Government Printing Office, 1969. B103 (see related subject and geographic material 12, 13, 14, 15, 16, 202, 203, 204, 215, 216, 217, 220, 238, 239, 240, 260). B

Intensive pumping of ground water has caused more than 800 square miles of irrigable land to subside in the Tulare-Wasco area, which is in the southeastern part of the San Joaquin Valley, California. Locally, ground-water levels declined as much as 200 feet between 1905 and 1964, and the maximum subsidence was about twelve feet by 1964. Subsidence was due to the compaction of the water-yielding deposits as the intergranular effective stresses increased. With bibliography.

206. Longwell, Chester R. and Richard F. Flint. Introduction to Physical Geology. 2d ed. New York: John Wiley and Sons, Inc. 1962. 504. A

A basic geologic text, fairly detailed, covering rock types and processes.

207. Masser, Ian. Analytical Models for Urban and Regional Planning. Newton Abbot (Devon): David and Charles, 1972. 164. E

The analytical or mathematical model for use in urban population, economics, and spatial organization is reviewed with appendices on matrix and computer operation actualization. The gravity model is presented along with its stage-up to the linked Lowry model. With bibliography.

208. McComas, Murry R. Geology Related to Land Use in the Hennepin Region. ISGS C 422. Urbana, Illinois: ISGS, 1968. 24. C

Due to the location of a major steel plant in north central Illinois, data assemblage and appraisal of the geologic constraints for potential development was undertaken for an approximately 700 square mile area. Geography, geology, surface and ground water, and mineral resources are investigated for best and multiple use of resources.

209. McComas, Murray R., Kenneth C. Hinkley and John P. Kempton. Coordinated Mapping of Geology and Soils for Land Use Planning. ISGS EGN No. 29. Urbana, Illinois: ISGS, 1969. 11. B

A general background discussion on basic information about the nature and significance of soils and related geologic data, a description of techniques used for coordinating soils and geological data, and the relationship of soils and geologic data to land-use planning.

210. McComas, Murray R. and Steve J. Nacht. Geology for Planning in Madison Township, Lake County, Ohio. Vol. I. Kent, Ohio: Kent State University Department of Geology, 1973. 40. C

A study of Madison Township's earth sciences in Lake County, Ohio, was undertaken. Covered are physiography and geology, natural resources, engineering geology, and conclusions and recommendations for best land use.

211. McDonald, S. D. and D. R. Nichols. Some Geological Facts that Affect Development, Hayward Shoreline Area, California. Washington, D.C.: USGS OFR 74-2, 1974. 1:24,000. D

212. McGill, John T. Growing Importance of Urban Geology. USGS C 487. Washington, D.C.: Government Printing Office, 1964. 4. B

Using the Los Angeles area as an example, the need for geologic information and problem identification in land use planning is outlined. Mapping scale and current governmental programs are briefly touched on.

213. _________. Preliminary Map of Landslides in the Pacific Palisades Area, City of Los Angeles, California. USGS MGIM I-284. Washington, D.C.: USGS, 1959. 1:4,800. B

Coastal zone landslides for an area of Los Anglees are mapped as active, historic, and prehistoric. Type of material involved (artificial fill, weather material) is also designated.

214. _________. "Residential Building-Site Problems in Los Angeles, California." In Geology of Southern California: Chapter X - Engineering Aspects of Geology, ed. Richard H. Johns, pp. 11-18. State of California Division of Mines Bulletin 170. San Francisco: State of California, 1954. B

A review of common suburban landsliding in the Los Angeles area with a land-form assessment matrix and a checklist of geologic properties. Building-site problems such as erosion, water seepage, and stability are covered.

215. Meade, Robert H. Compaction of Sediments Underlying Areas of Land Subsidence in Central California. USGS PP 497-D. Washington, D.C.: Government Printing Office, 1968. D39 (see related subject and geographic material 13, 14, 15, 16, 192, 202, 203, 204, 205, 216, 217, 220, 238, 239, 240, 260). B

An increase in effective overburden load from three to seventy kilograms per square centimeter, partly natural and partly manmade, has caused an average reduction of ten to fifteen percent in the volume of alluvial sediments in the San Joaquin and Santa Clara Valleys of California. Mechanics of compression are discussed.

216. _________. Petrology of Sediments Underlying Areas of Land Subsidence in Central California. USGS PP 497-C. Washington, D.C.: Government Printing Office, 1967. C83 (see related subject and geographic material 13, 14, 15, 16, 192, 202, 203, 204, 205, 215, 217, 220, 238, 239, 240, 260). B

A technical review of some sediments in the San Joaquin Valley of central California subject to subsidence. Sources, types, particle sizes, and clay mineralogy of sediments are covered.

217. _________. Removal of Water and Rearrangement of Particles During the Compaction of Clayey Sediments-Review. USGS PP 497-B. Washington, D.C.: Government Printing Office, 1964. B 23. B

218. Meeting the Earthquake Challenge. Final Report to the Legislature State of California by the Joint Committee on Seismic Safety. Sacramento, California: (reprinted as) California Division of Mines and Geology Special Publication 45, 1974. 223. C

A comprehensive collection of reports on the earthquake hazard problem in California. Presented are legislative recommendations for reduction of earthquake hazards and advisory group reports on land use planning, engineering considerations, disaster preparedness management, post-earthquake recover, and governmental coordination. A supplemental information summary includes technical background and existing local governmental earthquake code provisions.

219. "Meeting the Geologic Hazard Challenge." Report to Washington State Legislature (1975 Session) from the Ad Hoc Committee on Geologic Hazards Appointed by the Senate Committee on Commerce. Mimeo. Seattle, Washington: University of Washington Department of Geological Sciences, 1974. Various pagination plus appendices. C

Objectives, management procedures, and recommendations for legislative action are presented for abatement of geologic hazards in the State of Washington for six major subject categories: floods, dam safety, landslides, earthquakes, snow and ice avalanches, and volcanic hazards.

220. Miller, R. E., J. H. Green and G. H. Davis. Geology of the Compacting Deposits in the Los Banos-Kettleman City Subsidence Area, California. USGS PP 497-E. Washington, D.C.: Governmental Printing Office, 1971. E46 pp. plus plates (see related subject and geographic material 215, 216, 217). B

Geology of subsiding area in the San Joaquin Valley of central California is reviewed. Covered is geologic history, structure, stratigraphy, and hydrology of the units.

221. Moore, Raymond C. Introduction to Historical Geology. 2d ed. New York: McGraw-Hill Book Co., Inc., 1958. 656. A

A basic text in historical geology with breakdown by geologic periods, fossil finding and recognition, and glossary.

222. Mullineaux, Donal R. Geology of the Renton. Auburn, and Black Diamond Quadrangles, King County, Washington. USGS PP 672. Washington, D.C.: Government Printing Office, 1970. 92. B

The geology of three seven and a half minute quadrangles southeast of Seattle is investigated. Emphasis is on recent glacial history and till deposits. Regional geology is related to the problems of growing urbanization through unit engineering properties, hazards, and economic mineral deposits. With bioliography.

223. Mullineaux, Donal R., Manuel G. Bonilla and Julius Schlocker. "Relation of Building Damage to Geology in Seattle, Washington, during the April 1965 Earthquake." In Geological Survey Research 1967: Chapter D, pp. D183-D191. USGS PP 575-D. Washington, D.C.: Government Printing Office, 1967. B

A brief review of damage in the Puget Sound region of Washington from the April 29, 1965 earthquake. The damage pattern in strongly affected areas did not show an easily recognizable relation to the distribution of varying types of geologic materials.

224. Mullineaux, Donal R. and D. W. Peterson. Volcanic Hazards on the Island of Hawaii. USGS OFR 74-239. 1974. 61 pp. plus plate. D

225. Newton, J. G. and L. W. Hyde. Sinkhole Problem in and near Roberts Industrial Subdivision Birmingham, Alabama: A Reconnaissance. Geological Survey of Alabama Circular 68. University, Alabama: Geological Survey of Alabama, 1971. 42 pp. B

Over 200 collapses and areas of subsidence have occurred between 1963 and 1970 in an urban area of Birmingham, Alabama, affecting streets, parking lots, railroads, sewer and water mains, office buildings, and an interstate highway. The lowering of the water table as much as 140 feet has led to the collapse of cavities in residential clay which has migrated downward through openings in underlying carbonate rocks.

226. Nichols, Donald R. "Seismic Safety Legislation and Engineering Geology: An Example from California." BAEG 11, No. 2, Spring 1974, 135-145. B

Recommendations for legislative action by the California Legislature for reduction of seismic hazards are presented. Specific measures enacted into law by the California Legislature are outlined and suggestions for integrating engineering geology into land use planning are covered.

227. Nichols, Donald and J. M. Buchanan-Banks. Seismic Hazards and Land-Use Planning. USGS C 690. Washington, D.C.: Governmental Printing Office, 1974. 33. C

The report outlines the earthquake-induced geologic conditions that could be hazardous, the type of problems they may pose, how information can be obtained to assess the degree of hazard, and some possible implications to land use.

228. Nichols, Donald R. and Catherine C. Campbell, ed. Environmental Planning and Geology. Proceedings of the Symposium on Engineering Geology in the Urban Environment arranged by the Association of Engineering Geologists for the October 1959 National Meeting in San Francisco. Washington, D.C.: Government Printing Office, 1971. 204. B

A series of twenty papers stressing an interdisciplinary approach of geologic information, primarily for urban planning. Four papers present geologic factors in urban areas with concerns in hazards (earthquakes and landslides, natural resources, foundations, and hydrology), followed by discussions and suggestions on the interaction of geologic information and management in making governmental planning decisions. Specific geologic problems are highlighted in pollution, salinity, and site evaluation, along with the development and use of geologic engineering maps in community zoning and planning.

229. Nilsen, T. H. Preliminary Photointerpretation Maps of Landslides and Other Surficial Deposits of 56 7 1/2 - Minute Quadrangles in the Southeastern San Francisco Bay Region, Alameda, Contra Costa and Santa Clara Counties, California. USGS OFR 75-277. 1975. 1:24,000. D

230. Norell, Wayland F. Air Photo Patterns of Subsurface Mining in Ohio. Columbus, Ohio: State of Ohio Department of Highways, n.d., 1966? In 2 volumes of stereophotos with text inserted. B

A manual of aerial sterophoto interpretation for recognizing abandoned deep coal mine features such as roof collapse, tipples, shafts, gangways, and gob piles. Text is inserted in a folio set of photos intended primarily for use in highway location problems.

231. Olson, Robert, and Mildred M. Wallace. Geologic Hazards and Public Problems: Conference Proceedings. Proceedings of a Conference on Geologic Hazards and Public Problems May 27, 28, 1959. Sponsored by the Office of Emergency Preparedness Region Seven, Santa Rosa, California. Washington, D.C.: Government Printing Office, 1959. 335. B

A collection of twenty papers with emphasis on the western United States and earthquake problems. Areas covered include earthquake hazards, disaster planning, earthquake computer simulation, seismic sea waves, land subsidence, and landslides.

232. Osterwald, F. W. and J. O. Maberry. Engineering Geologic Map of the Woodside Quadrangle, Emery and Carbon Counties, Utah. USGS MIS I-798. Washington, D.C.: USGS, 1974. 1:48,000. D

233. Pampeyan, E. H. Geologic Map of the San Andreas Fault Zone in San Andreas Lake, San Mateo County, California. USGS MFSM MF-652. Washington, D.C.: USGS, 1975. 1:6,000 (see related subject material 8, 10, 23, 247, 255, 265, 266, 272, 289). D

234. Patri, Tito, David C. Streatfield and Thomas J. Ingmire. Early Warning System: The Santa Cruz Mountains Regional Pilot Study. Berkeley, California: Department of Landscape Architecture College of Environmental Design University of California at Berkeley, 1970. 297. E

A conceptual model for natural resource analysis in long range planning is presented. The model involves the prediction of the location and definition of conflicts and potentially degrading adverse impacts resulting from the development of complex and dynamic landscapes. Parameters covered, formated on a grid system, include climate, soils, geology, vegetation, physiography, and hydrology for the study area, the Santa Cruz Mountains south of San Francisco, California.

235. Payne, C. Marshall. Bedrock Geologic Map of Minneapolis, St. Paul and Vicinity. Minnesota Geological Survey. Miscellaneous Map Series Map M-1. Minneapolis: University of Minnesota, 1965. 1:24,000. B

An example of geologic mapping in an urban area. Bedrock units are shown, with topography drawn on top of bedrock surface.

236. Pessl, Fred, Jr., William H. Langer and Robert B. Ryder. Geologic and Hydrologic Maps for Land-Use Planning in the Connecticut Valley with Examples from the Folio of the Hartford North Quadrangle, Connecticut. USGS C 674. Washington, D.C.: Government Printing Office, 1972. 12 (see related geographic material 70 et seq.). B

237. Pestrong, Raymond. "The Role of the Urban Geologist in City Planning." Mineral Information Service, 21, No. 10, October 1958, 151-152. San Francisco: State of California Division of Mines and Geology. B

Geologic hazards in urban areas are briefly covered along with the role of the professional geologist in discovering and publicizing them.

238. Poland, J. F. and G. H. Davis. "Land Subsidence Due to Withdrawal of Fluids." In Reviews in Engineering Geology. Vol. II, ed. David J. Varnes and George Kiersch, pp. 271-303. Boulder, Colorado: Geological Society of America, 1959 (see related subject and geographic material 12, 13, 14, 15, 16, 192, 202, 203, 204, 205, 215, 216, 217, 220, 239, 240, 260). B

A fairly technical review of land subsidence due to the withdrawal of underground fluids such as oil, gas, water, and brines. The historiography of conceptual development, mechanics of subsidence, and examples of fluid withdrawal and ground level are covered. With bibliography.

239. Poland, J. F., B. E. Lofgren, R. L. Ireland and R. G. Pugh. Land Subsidence in the San Joaquin Valley, California, As of 1972. USGS PP 437-H. Washington, D.C.: Government Printing Office, 1975. H78 (see related subject and geographic material 12, 13, 14, 15, 16, 192, 202, 203, 204, 205, 215, 216, 217, 220, 240, 260). B

With pumping of ground-water for irrigation; ground subsidence exceeded twenty-eight feet in some areas. With canal water import, artesian pressures are recovering and the land surface is stabilizing.

240. Poland, J. F., B. E. Lofgren and F. S. Riley. Glossary of Selected Terms Useful in Studies of the Mechanics of Aquifer Systems and Land Subsidence Due to Fluid Withdrawal. USGS WSP 2025. Washington, D.C.: Government Printing Office, 1972. 9 (see related material 12, 13, 14, 15, 16, 192, 202, 203, 204, 205, 215, 216, 217, 220, 239, 260). B

A collection of terms through review of field work and engineering and geologic literature on aquifer system mechanics and land subsidence. Emphasis is on type of sediments. Twenty-five terms are listed.

241. Pollard, William S., Jr. and Daniel W. Moore. "The State of the Art of Planning." Journal of the Urban Planning and Development Division of the Proceedings of the American Society of Civil Engineers, 92, No. UP1, April 1959, 27-42. E

A systems analysis matrix approach to coordinating the various components of a comprehensive planning process is advocated.

242. Pomeroy, J. S. Landslide Susceptibility Map of the Ambridge 7 1/2 Minute Quadrangle, Allegheny County and Vicinity, Pennsylvania. USGS ORF 74-76. 1974. 19 pp. plus plates. D

243. ________. Landslide Susceptibility Map of the Emsworth 7 1/2 Minute Quadrangle, Allegheny County and Vicinity, Pennsylvania. USGS OFR 74-75. 1974. 15 pp. plus plates. D

244. Powell, W. J. and P. E. LaMoreaux. A Problem of Subsidence in a Limestone Terrain at Columbiana, Alabama. Geological Survey of Alabama Circular 56. University, Alabama: Geological Survey of Alabama. 1969. 30. B

Ground subsidence in an urban area damaged a municipal water filter plant, a water storage tower, and a Federal housing project. Subsidence was due to the lowering of the ground water table and the removal of unconsolidated surficial materials by municipal well pumping.

245. Proceedings of the International Conference on Microzonation for Safer Construction Research and Application. Seattle, Washington: Sponsored by the National Science Foundation, UNESCO, University of Washington, American Society of Civil Engineers, and the American Academy of Mechanics, 1972. 987 (in 2 vols.). C

A comprehensive collection of over sixty technical papers on all aspects of seismicity. State of the investigatory art, engineering mechanics, structural design, soil and foundation mechanics, and governmental response to earthquake hazards are covered, with extensive bibliographies.

246. Proceedings of the 7th Annual Engineering Geology and Soils Engineering Symposium. Sponsored by the Idaho Department of Highways, University of Idaho, and Idaho State University, held at Moscow, Idaho, April 9-11, 1959. Boise, Idaho: State of Idaho, n.d. 289. B

A collection of eighteen specialized papers primarily on the organization and application of engineering design criteria for a variety of projects such as tunnels, clay shale slope stability, embankment failure, railroad foundation, and ground water.

247. Radbruch, Dorothy H. Approximate Location of Fault Traces and Historic Surface Ruptures Within the Hayward Fault Zone Between San Pablo and Warm Springs, California. USGS MGIM I-522. Washington, D.C.: USGS, 1957. 1:62,500 (see related subject material 8, 10, 23, 233, 255, 265, 266, 289). B

The Hayward Fault zone is traced for the urbanized San Francisco East Bay area.

248. __________. Areal and Engineering Geology of the Oakland East Quadrangle, California. USGS GQM 769. Washington, D.C.: USGS, 1959. 1:24,000 (see related subject and geographic material 5, 6, 175, 249, 251, 254, 268, 269). B

Surficial geology map of unconsolidated and major bedrock units is given with an accompanying text giving a general lithologic description of each map unit along with characteristics such as workability, slope stability, and foundation conditions.

249. __________. Areal and Engineering Geology of the Oakland West Quadrangle, California. USGS MGIM I-239. Washington, D.C.: USGS, 1957. 1:24,000. B

Includes Emeryville, Treasure and Yerba Buena Island, and parts of Berkeley and Alameda. Text covers stratigraphy and geologic history while a table of engineering interpretations for the geologic units is given (see related subject and geographic material 5, 6, 175, 248, 251, 254, 268, 269).

250. ________. "Engineering Geology in Urban Planning and Construction in the United States." In International Geological Congress Report of the Twenty-Third Session - Czechoslovakia 1968: Proceedings of Section 12: Engineering Geology in Country Planning, ed. Miroslav Malkovsky and Quido Zaruba, pp. 105-111. Prague: Academia, 1968. B

A resume of the kinds of geologic work being done in urban areas is presented along with some specific examples of the current use of geology in urban planning and construction. Los Angeles with landslides, San Francisco with earthquakes and fill problems, Valdez with site relocation, and Chicago with multiple land use are covered. With bibliography of urban geology studies in the United States.

251. ________. Former Shoreline Features Along the East Side of San Francisco Bay, California. USGS MGIM I-298. Washington, D.C.: USGS, 1959. 1:48,000 (see related subject and geographic material 5, 6, 175, 248, 249, 254, 268, 269). B

The approximate boundaries of former shores, ponds, and tidal flats are shown for the Berkeley-Oakland area of San Francisco Bay. Construction problems in relation to bay muds and fills are briefly discussed.

252. Radbruch-Hall, Dorothy H. Map Showing Recently Active Breaks Along the Hayward Fault Zone and the Southern Part of the Calaveras Fault Zone, California. USGS MIS I-813. Washington, D.C.: USGS, 1974. 1:24,000 (see related subject material 8, 10, 23, 233, 247, 252, 265, 266, 272, 289). B

Seven strip maps trace fault breaks along the Hayward and Calaveras fault zones of the San Andreas fault system from Richmond to Hollister, California. Fault breaks are expressed in two categories: active and inactive; active breaks identified by observable land surface rupture and creep. A selected bibliography is given.

253. ________ et al. Tectonic Creep in the Hayward Fault Zone California. USGS C 525. Washington, D.C.: Government Printing Office, 1966. 13. B

A collection of short articles which review damage to culverts, water tunnels, buildings, and railroad tracks straddling the Hayward fault zone in the California bay area.

254. Padbruch, Dorothy H. and K. C. Crowther. Map Showing Areas of Estimated Relative Amounts of Landslides in California. USGS MGIM I-747. Washington, D.C.: USGS, 1973. 1:1,000,000. B

Map of California shows the estimated relative proportion of area covered by landslides within various bedrock and surficial units throughout the state. Using a dual classification scheme, areas are ranked according to estimated relative amount of area covered by landslides with amount increasing from one to six, and also classified by type of rock or surficial deposit (geologic unit) as shown by letter(s). Explanatory text of variables in a landslide model is also given.

255. Radbruch, Dorothy H. and Julius Schlocker. Engineering Geology of Islais Creek Basin San Francisco, California. USGS MGIM I-264. Washington, D.C.: USGS, 1965. 1:1,200 (see related subject and geographic material 5, 6, 175, 248, 249, 251, 268, 269). B

Maps show (a) thickness of and contours on top of a sand layer useful for foundation support, (b) bedrock contours and surface exposure, and (c) an isometric fence diagram of a three-square mile area of Islais Creek Basin in metropolitan San Francisco. The texts review the geology of the basin for an evaluation of foundation suitability for industrial location in an artificial fill area.

256. Ray, Richard G. Aerial Photographs in Geologic Interpretation and Mapping. USGS PP 373. Washington, D.C.: Government Printing Office, 1960. 230 (see related subject material 189). A

Techniques and procedures of aerial photographs in geologic interpretation and mapping are discussed. Features of the image (tone, color, texture, pattern) are related to structural and lithologic geology. Various photographic instrumentation approaches are reviewed. With bibliography.

257. Richards, James W. "Discussion: Geologic Problems of Urban Growth in Limestone Terrains of Pennsylvania." BAEG, 8, No. 2, Fall 1972, 195-200. A

An electrical resistivity research method for predicting solution cavities in limestone terrain is presented.

258. Richter, Charles F. "Earthquakes and Earthquake Damage in Southern California." In Geology of Southern California: Chapter X - Engineering Aspects of Geology, ed. Richard H. Johns, pp. 5-10. State of California Division of Mines Bulletin 170. San Francisco: State of California, 1954. B

A brief review of intensity scales, types of and reasons for structural damage, and risk areas in relation to earthquakes.

259. ________. Elementary Seismology. San Francisco: W. H. Freeman and Co., 1958. 768. A

Methods of study and assumptions about earthquakes are covered. Emphasis is on types of ground motion, effects, and instrumentation. Specific areas of earthquake occurrence worldwide are reviewed, and appendices provide mathematical tables utilized in earthquake studies.

260. Riley, Francis S. Land-Surface Tilting Near Wheeler Ridge, Southern San Joaquin Valley, California. USGS PP 497-G. Washington, D.C.: Government Printing Office, 1970. G29 pp. plus plates (see related subject and geographic material 12, 13, 14, 15, 16, 192, 202, 203, 204, 205, 215, 216, 217, 220, 240). B

An area at the southern end of the San Joaquin Valley in central California subject to subsidence was instrumented to identify and furnish magnitudes of tilt related to specific causes.

261. Risser, Hubert E. Environmental Quality Control and Minerals. ISGS EGN No. 49. Urbana, Illinois: ISGS, 1971. 10. B

A general review of the production and utilization of various mineral commodities versus their environmental effects. Feasibility and consequences of regulation and the need to assess and balance production demand versus environmental cost is covered.

262. ________. Problems in Providing Minerals for an Expanding Population. ISGS ENG No. 5. Urbana, Illinois: ISGS, 1965. 6. B

A review of the growing competition between mineral extractive industries and urbanization for mineable versus developable land. Inventoried are planning organizations in the Illinois area which can utilize mineral data in an integrated land use planning format.

263. Risser, Hubert E. and R. L. Major. Urban Expansion--An Opportunity and a Challenge to Industrial Mineral Producers. ISGS EGN No. 16. Urbana, Illinois: ISGS, 1967. 19. B

Advance identification of mineral deposits and planning for their extraction is necessary to resolve zoning and urban expansion conflict and promote multiple or sequential use of land.

264. Robinson, Charles S. et al. Geological, Geophysical and Engineering Investigations of the Loveland Basin Landslides, Clear Creek County, Colorado, 1963-65. USGS PP 673-A, B, C, D, E, F, G. Washington, D.C.: Government Printing Office, 1972. 43. B

A collection of eight short papers on the development of a massive slide in 1963 during excavation for a tunnel approach plaza of I-70 in the Rocky Mountains about fifty-five miles west of Denver. Topics covered include geology, electrical resistivity, seismic refraction, engineering studies and stability analysis.

265. Ross, Donald C. Map Showing Recently Active Breaks Along the San Andreas Fault Between Tejon Pass and Cajon Pass, Southern California. USGS MGIM I-553. Washington, D.C.: USGS, 1969. 1:24,000 (see related subject material 8, 10, 23, 233, 247, 255, 266, 272, 289). B

Five strip maps trace recent movement in the San Andreas fault zone for a hundred mile reach northeast of Los Angeles.

266. Sarna-Wojcicki, A. M., E. H. Pampeyan and N. T. Hall. Map Showing Recently Active Breaks Along the San Andreas Fault Between the Central Santa Cruz, Mountains and the Northern Gabilan Range, California. USGS MFSM MF-650. Washington, D.C.: USGS, 1975. 1:27,000 (see related subject material 8, 10, 23, 233, 247, 255, 265, 272, 289). D

267. Schlicker, Herbert G. and Robert J. Deacon. Engineering Geology of the Tualatin Valley Region, Oregon. State of Oregon Department of Geology and Mineral Industries Bulletin 60. Portland, Oregon: State of Oregon Department of Geology and Mineral Industries, 1967. 103 pp. plus plates. B

The Tualatin Valley region south of Portland, Oregon is undergoing extensive urbanization. This report, enabling planners to make choices of best land use, provides information on the character of bedrock and unconsolidated deposits, on the distribution of surface and underground water, on the location of potentially valuable minerals and construction materials such as sand and gravel, and on environmental hazards such as floods, landslides, and soft ground. Engineering problems related to these geologic factors have been analyzed.

268. Schlocker, Julius. Geology of the San Francisco North Quadrangle, California. USGS PP 782. Washington, D.C.: Government Printing Office, 1974. 109 pp. plus 3 plates (see related subject and geographic material 5, 6, 175, 248, 249, 251, 254, 269). B

The north half of the city of San Francisco, the south tip of Marin and Tiburon Peninsulas, Belvedere, Angel, and Alcatraz Islands, and part of Treasure Island are covered. Basic geologic structures, both unconsolidated and bedrock, are surveyed to aid in construction and other civil engineering problems, and in better understanding the general geology of the Coast Ranges, and the Franciscan Formation in particular. With a plate showing landslide areas and exposed bedrock.

269. Shlocker, Julius, M. G. Bonilla and Dorothy H. Radbruch. Geology of the San Francisco North Quadrangle, California. USGS MGIM I-272. Washington, D.C.: USGS, 1958. 1:24,000 (see related subject and geographic material 5, 6, 175, 248, 249, 251, 254, 268). B

Includes northern half of the city of San Francisco southern tip of Marin and Tiburon Peninsulas, and Angel Island, Alcatraz Island, and a part of Treasure Island. Part of a detailed engineering geology study, the map text covers stratigraphy of consolidated and unconsolidated deposits, topography, structure, and seismicity. Table gives a generalized description of engineering properties (such as shearing strength, slope stability, workability) of lithologic units.

270. Schultz, John R. and Arthur B. Cleaves. Geology in Engineering. New York: John Wiley and Sons, Inc., 1955. 592. A

A basic text on utilization of geologic information for engineering purposes. An introduction to geologic processes and properties is given along with geologic investigating and mapping procedures adaptable for engineering information needs while soil mechanics, dams, reservoirs, tunnels, highways, airfields, and concrete aggregates are reviewed.

271. Schumann, H. H. Land Subsidence and Earth Fissures in Alluvial Deposits in the Phoenix Area, Arizona. USGS MIS I-845-H. Washington, D.C.: USGS, 1974. 1:250,000. D

272. Sharp, Robert V. Map Showing Recently Active Breaks Along the San Jacinto Fault Zone Between the San Bernadino Area and Borrego Valley, California. USGS MGIM I-675. Washington, D.C.: USGS, 1972. 1:24,000 (see related subject material 8, 10, 23, 233, 247, 255, 265, 266, 289). B

One in a series of strip maps designed to show the lines of inferred most recent movement within the San Andreas fault system, helpful to those concerned with land use and development on or near the faults. With accompanying text and annotated bibliography.

273. Slosson, James E. Engineering Geology - Its Importance in Land Development. Washington, D.C.: The Urban Land Institute, 1968. 20. B

Management and research procedures for the application of engineering geology in urban residential expansion to achieve efficiency in construction and to cut costs is reviewed. Specific development examples in southern California are used. Construction criteria for a sanitary landfill is also given.

274. Smith, W. Calhoun. Geologic Factors in Dam and Reservoir Planning. ISGS EGN No. 13. Urbana, Illinois: ISGS, 1966. 10. B

Planning of dam and reservoir sites must include consideration of topography, hydrology, and geology. Problem areas are unconsolidated deposits, shale or cavernous limestone, and bedrock discontinuities. Economic aspects to be considered are availability of construction materials, local mineral resources, and a balance between site quality and budget. General site and construction criteria are given.

275. __________. Geology and Engineering Characteristics of Some Surface Materials in McHenry County, Illinois. ISGS EGN No. 19. Urbana, Illinois: ISGS, 1968. 23. B

Over one hundred samples were taken and analyzed from glacial till, sand and gravel, lacustrine deposits, and moraines. Grain-size analysis, Atterberg limits, mineralogical composition, and activity and liquidity index values were run to give probable engineering characteristics of identifiable geologic units for structure siting.

276. ________. Preliminary Geological Evaluation of Dam and Reservoir Sites in McHenry County, Illinois. ISGS EGN No. 25. Urbana, Illinois: ISGS, 1969. 33.

Forty-six dam and reservoir sites in McHenry County, Illinois were evaluated for geologic feasibility of construction. Topography, surficial, and bedrock geology was investigated at each site.

277. Spencer, Edgar Winston. Geology: A Survey of Earth Science. New York: Thomas Y. Crowell Co., 1965. 653. A

A basic and extensive text on earth sciences covering both physical and historical geology with sections on astronomy, atmosphere, and the oceans. Includes color study maps.

278. Stewart, Gary F. and Frank W. Wilson. Environmental Geology Digest, Vol. 2. Lawrence, Kansas: University of Kansas State Geological Survey, 1969. 165. A

A compilation of publications, research projects, papers, conferences, and correspondents in the field of environmental geology. A number of annotated entries are given concerning geology applicable to land planning.

279. Stokes, William Lee and David J. Varnes. "Glossary of Selected Geologic Terms with Special Reference to Their Use in Engineering." Colorado Scientific Society Proceedings, 16, 1955, 165 pp. A

Intended primarily to provide civil engineers and specialists in related fields with a compact glossary of terms used in geology. It is a technical as opposed to a popular glossary. Contains about 2,670 entries.

280. A Study of Earthquake Losses in the Puget Sound, Washington, Area. USGS Open-File Report 75-375. Washington, D.C.: USGS, 1975. 298. B

Two worst possible earthquakes are simulated for a six-county Puget Sound urbanized area. Total damage profiles are developed for each county in respect to planning a response for earthquake disaster. Historical geophysical conditions are modeled to calculate a quantative seismic episode. With bibliography.

281. Swann, D. H. et al. ILLIMAP-A Computer-Based Mapping System for Illinois. ISGS C 451. Urbana, Illinois: ISGS, 1970. 24. B

A description of a computer-based mapping system designed to construct maps at any scale with a high degree of accuracy, the program written for FORTRAN IV and 360 Assembler languages for the IBM 360/75. Advantages are (1) any point legally described may be plotted, (2) all section corners are located in their accurate relation to U.S. Geological Survey quadrangle maps, (3) and only four section corners are needed to calculate a point location in that section.

282. Tank, Ronald W., ed. Focus on Environmental Geology: A Collection of Case Histories and Readings from Original Sources. New York and London: Oxford University Press, 1973. 474. C

A collection of forty-two essays covering such subjects as volcanism, earthquake activity, tectonic movements and sea level changes, mass movement, sedimentation, and urban geology.

283. Thornbury, William D. Regional Geomorphology of the United States. New York: John Wiley and Sons, Inc., 1965. 609. A

A fairly technical text covering North American physiography and topography by provinces.

284. Trimble, Donald E. Geology of Portland, Oregon and Adjacent Areas. USGS B 1119. Washington, D.C.: Government Printing Office, 1963. 119 pp. plus plate. B

A geologic investigation and mapping of five 15-minute quadrangles (about 1,040 square miles) around Portland, Oregon on a scale of 1:62,500. The report is an example of basic geologic information broadly applicable to foundation conditions, construction materials, and mineral deposits for consideration in land use planning.

285. Tubbs, Donald W. Landslides in Seattle. State of Washington Division of Geology and Earth Resources Information Circular 52. Olympia, Washington: Department of Natural Resources, 1974. 15 pp. plus plates. B

A well-written account of 1972 urban landslides in Seattle, Washington which caused $500,000 worth of damages. Modeled are the various physical parameters causing slope failure and a geologic background of the area. The greatest danger zone is along the trace of the contact between the Esperance Sand and either the Lawton Clay or pre-Lawton sediments.

286. "Urban Geology Plan Begun." California Geology, 24, No. 4-5, April-May 1971, 85. B

A comprehensive statewide urban geology plan is being undertaken in California. Focus of the study will be to determine, using a multi-discipline approach, those areas having the greatest present and potential urban geology problems.

287. Varnes, David J. The Logic of Geological Maps, with Reference to Their Interpretation and Use for Engineering Purposes. USGS PP 837. Washington, D.C.: Government Printing Office, 1974. 48 pp. plus 3 plates (see related subject material 33, 191, 236).

An excellent paper discussing the formal logic the mapping process is based upon. Analytical tools for logistical decisions are presented, along with information storage and manipulation processes utilized in formating differing kinds of maps. With bibliography.

288. Vecchioli, John and Henry F. H. Ku. Preliminary Results of Injecting Highly Treated Sewage-Plant Effluent into a Deep Sand Aquifer at Bay Park, New York. USGS PP 751-A. Washington, D.C.: Government Printing Office, 1972. A14. B

Recharge of a ground-water aquifer subject to salt-water encroachment was attempted with sewage effluent which was given tertiary-stage treatment and met potable-water standards. Emphasis is on the chemistry and mechanics of the injection water. Excessive head buildup at the injection well was due to turbidity in the recharge water, while the first water slug recovered during repumping was turbid with high iron phosphate, and bacterial content. With bibliography.

289. Vedder, J. G. and Robert E. Wallace. Map Showing Recently Active Breaks Along the San Andreas and Related Faults Between Cholame Valley and Tejon Pass, California. USGS MGIM I-574. Washington, D.C.: USGS, 1970. 1:24,000 (see related subject material 8, 10, 23, 233, 247, 255, 266, 272). B

Recently active fault breaks along the San Andreas zone are traced by five strip maps for an area northwest of Los Angeles.

290. Waldron, Howard H. et al. Preliminary Geologic Map of Seattle and Vicinity, Washington. USGS MGIM I-354. Washington, D.C.: USGS, 1962. 1:31,680. B

Stratigraphic units and a generalized description of engineering properties (such as drainage, ease of excavation, foundation stability) of the map units are given for Metropolitan Seattle and outlying areas. Uncolored.

291. Waldrop, H. A. and H. J. Hyden. "Landslides Near Gardiner, Montana." In Short Papers in Geology, Hydrology and Topography Articles 180-239: Geological Survey Research 1962, pp. E11-E14. USGS PP 450-E. Washington, D.C.: Government Printing Office, 1963.

The north and east slopes of Sepulchre Mountain in Yellowstone National Park is disintegrating into complex landslide patterns. Failure is due to bentonite beds, rock dip, earthquakes, and glacial action.

292. Wallace, Robert E. Goals, Strategy, and Tasks of the Earthquake Hazard Reduction Program. USGS C 701. Washington, D.C.: Government Printing Office, 1974. 26. B

The program designed to provide the background data and understanding needed to reduce earthquake hazards is presented. Goals are set, technical and scientific strategies for reaching those goals are suggested, and a selection of specific tasks to be undertaken within the next several years is tabulated.

293. Washington Land Planning Commission. Land Planning Information: A Call for Coordination and Compatibility. Bellevue, Washington: State of Washington Land Planning Commission, n.d. 1973. 15. E

Recommendations for a systems format for a natural resources and urban data bank are outlined.

294. White, W. Arthur and M. Katherine Kyriazis. Effects of Waste Effluents on the Plasticity of Earth Materials. ISGS EGN No. 23. Urbana, Illinois: ISGS, 1968. 23. B

A study of the effects of waste effluents on the plastic properties of clay minerals. Normally stable earth materials, when saturated with soap, detergents, or water softeners, can become unstable and cause environmental and property damage.

295. Willman, H. B. Summary of the Geology of the Chicago Area. ISGS C 460. Urbana, Illinois: ISGS, 1971. 77 pp. plus map. B

The report presents a format and a general summary of basic geologic data necessary for the solution of some specific problems in regional planning of land use. Bedrock stratigraphy, glacial stratigraphy and history, physiography, and mineral resources are covered. Information assembled for the Chicago area relates to foundation construction, tunnels, dams, highways, and natural resource conservation.

296. Withington, C. F. "Geology - Its Role in the Development and Planning of Metropolitan Washington." Journal of the Washington Academy of Sciences, 57, No. 7, October 1967, 189-199. B

The geophysical setting, historical geology, and application of geologic information for resource management and hazard avoidance is discussed for metropolitan Washington, D.C.

297. Yehle, R. A. Reconnaissance Engineering Geology of Sitka and Vicinity, Alaska, with Emphasis on Evaluation of Earthquake and Other Geologic Hazards. USGS OFR 74-53. 1974. 104 pp. plus plates. D

298. Young, Eleanor. "Problems of Land Use in a Seismic Area with Special Reference to the Hayward Fault." Mineral Information Service, 19, No. 4, April 1966, pp. 59-601. San Francisco: State of California Division of Mines and Geology.

Types of unstable foundations and kinds of land use in reference to a possible earthquake are discussed.

299. __________. "Urban Planning for Sand and Gravel Needs." Mineral Information Service, 21, No. 10, October 1968, pp. 147-150. San Francisco: State of California Division of Mines and Geology. B

The need to identify and set aside sand and gravel mining reserves in an urban area is covered, along with pollution prevention procedures in excavation and successive reclamation and multiple use ideas.

300. Zenone, Chester, H. R. Schmoll and Ernest Dobrovolny. Geology and Ground Water for Land Use Planning in the Eagle River-Chugiak Area, Alaska. USGS OFR 74-57. 1974. 36. D

301. Zumberge, James H. Elements of Geology, 2d ed. New York: John Wiley and Sons, Inc., 1963. 342. A

A textbook covering both physical and historical geology. With colored plates.

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